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NOTES AND REFLECTIONS—BY A SOUTHERNER.

NO. II.

ON *POUDRETTE*.

Of all the subjects that claim the attention of the Agriculturist, there is no one of so much importance as the means of imparting fertility to the soil, and thus preserving it in a state of continuous and improving productiveness. So much has already been said upon the various modifications of tillage, manuring, and other processes of amelioration—all having for their end an augmentation of our agricultural products—that I shall pass them over, and confine myself to a few remarks relative to one great and economical source of fertility, which, either from ignorance or prejudice, perhaps both, has almost entirely escaped the attention of the farmers of this country.—I mean the contents of our privies. I am aware that considerable difficulty must be experienced in awakening the people to a due sense of their interests in relation to this subject; the more especially, as it will not only be necessary to convince them of the great source of profit and saving which it is capable of securing, but also to vanquish inveterate prejudices, originating in ignorance, and perpetuated by that innate reluctance to throw off long cherished errors, which so often paralyzes human action.—Were we, however, to despair in all cases, because of this disposition of mankind to cling to their errors, there would be a limit set to all improvement, and we should go on, from century to century, plodding in the footsteps of our forefathers, and while we contented ourselves with the modicum of wisdom which they bequeathed to us, do nothing for ourselves, or for those who are to come after us. Had agriculturists been content to adopt the hypothesis of Jethro Tull—that the chief element of fertility is the complete pulverization of the soil, this being of itself fully adequate without the addition of manures,—what would now have been the condition of our fields! and how deplorable the situation of the crowded population of Europe, where the highest agricultural improvements, based as they are upon abundant manuring, and the most perfect system of tillage, are barely adequate to secure the poorer classes against all the horrors of starvation!

In treating my subject, I shall first consider the facts furnished by the practice of the French, who seem to have availed themselves

to the greatest extent, of the fertilizing agency of human ordure—afterwards adding such reflections as relate to the application of this invaluable, but hitherto neglected, means of amelioration in our own country.

A little beyond one of the barriers of the city of Paris, has existed for many years, one of the most singular establishments ever instituted by human industry. This place, called Montfaucon, is designed as a receptacle for all dead and disabled horses, cattle, dogs, cats, and other animals, from the various quarters of Paris; and here, revelling in filth, and debased to the lowest state of human degradation, man may be seen engaged in all the intermediate grades of the most disgusting employments, between the traffic in the stinking carcasses of putrid animal flesh and offal, and the rearing of maggots, either to serve as bait for fishermen, or to fatten poultry for the tables of the luxurious citizens of the refined metropolis of France. To the same place is also conveyed all the *night-soil* and *urine* from the privies of the city, which are submitted to a series of processes, by which they are converted into a dry, almost inodorous powder, called *Poudrette*, which being in great demand amongst agriculturists, is transported to all parts of the kingdom, and even to the West Indian Colonies, thus proving an immense source of revenue to those who furnish it, and of profit to those who purchase it for the purpose of enriching their lands.

As my observations will be confined to this last branch of industry, I shall first describe the processes employed at Montfaucon, in the preparation of *Poudrette*, and then point out some of the advantages to be derived from this substance as a fertilizing agent.

The receptacles formed for the night soil and urine, consist of six large reservoirs, or pits, so disposed upon the declivity of a hill, in a regular series, the one above the other, that the more fluid parts of the materials flow off gradually from the more elevated reservoirs, to those which occupy the lowest level, while the solid portions remain in those above. The contents of the privies are collected by night-men in tubs, which are placed in carts, or waggons, designed for the purpose, and in these are conveyed to Montfaucon. The following data will furnish some idea of the extent of this branch of business, and of the profits arising from it. In 1810, the amount of night-soil conveyed to the *voirie* of Montfaucon was, 16,717 loads, of 30 tubs each, making 72 cubic feet. In 1811, the quantity was 16,515 loads; in 1812, 16,645; amounting in three years, to 47,877 loads, or a mean average, per annum, of 16,625 loads, or 498,750 tubs.* In later years, the quantity was much greater than during the above period, although there was not a corresponding increase in the amount of *Poudrette* obtained. This is explained by the fact, that within this time, such modifications were introduced in the construction of many of the privies, by ren-

* Parent Duchatelet, Hygiene, Publique, Tome ii. p. 361.

dering them so tight as to prevent percolation; in consequence of which, the relative proportion of fluid to solid constituents was greatly increased. If we estimate the products and profits of the establishment for a single year, taking the consumption of 1818 for our guide, we shall arrive at the following conclusion:—There were taken directly from Montfaucon, in the course of this year, partly by farmers, and partly by agents, 50,000 sacs of Poudrette, each containing twelve heaped bushels, (French.) Besides this, 20,000 sacs were sent to the departments of the kingdom, making the total aggregate for the year, 70,090 sacs. This, at 7, 8, and 9 francs per sack, the selling price—taking 8 as the medium, produced the enormous sum of 560,000 francs, or upwards of one hundred thousand dollars, for a material, which, in our cities, serves no other purpose than to contaminate the air we breath, poison our wells, and sow the seeds of pestilence; to say nothing of the valuable return in the way of agricultural products, and the consequent prosperity, secured by its agency.

From the same authentic source of information,* we derive the following details, relative to the preparation of Poudrette.

The materials, as they are taken from the privies, present themselves under two aspects, according as they are taken from the surface, or near the bottom. The former, which constitute more than nine tenths of the whole, are entirely fluid; the remainder is more or less solid, according to the depth from which it is taken. In winter, or during wet weather, both portions are precipitated together into the most elevated reservoir, or basin. In summer, however, if the weather be dry, the solid portion is immediately spread out upon the declivity of sloping eminences, to undergo the process of drying.

In the most elevated reservoir, the fluid and solid contents become more or less perfectly separated from each other; the latter, obedient to their gravity, falling to the bottom, while the former gradually drain off into the reservoirs below, through an opening left for this purpose. This separation is, however, never complete. The contents of the first reservoir, even at the expiration of three or four years, present the aspect of a thick pasty mass, partly solid, and partly diffuent, which is finally dried by contact with the atmosphere. To accomplish this end, the whole is taken from the reservoir, and spread upon the uneven surface of the adjacent eminences, where it is stirred two or three times a day, by means of a horse rake, or harrow. The time consumed in drying is of course variable, according to the season of the year, and the state of the atmosphere; but the operators never wait for the mass to become perfectly dry, before they proceed to throw it into heaps. On account of this remaining humidity, the product of the preceding stages of the process still remains so cohesive, that when it is collected into

* Parent—Duchatelet, *Loc. cit.*

heaps, it is capable of being flattened or compressed, like stiff mortar, and cannot be broken down into a pulverulent mass. The heaps are generally made from eight to ten *metres* in height, by twenty-five or thirty in breadth. They are seldom disturbed in less than a year from the time of their formation, and are sometimes suffered to remain two or three years. When the Poudrette is demanded, the heaps are broken upon one side, by picks, shovels, and rakes, by which the component mass is entirely broken down into a light, darkish colored, unctuous mould, which exhales a peculiar unpleasant nauseous smell, entirely different from that of either recent or dry fecal matter.

This is the course of preparation to which the contents of the upper reservoir, which, as has been remarked above, consist chiefly of the more solid materials, are submitted. From the contents of the lower reservoirs, into which the fluid parts drain, another species of Poudrette is obtained. The urine, and the other fluids which are thrown into the upper reservoir, in draining off gradually into those below, of course carry with them more or less of the finer and more bouyant particles of fecal matter. These are precipitated to the bottom of the four most dependent reservoirs, whence the deposit is collected every three or four years, and submitted to the process of drying detailed above. This substance requires a longer period for complete dessication than the preceding, but finally becomes dryer and more finely pulverised. On this account partly, but mainly because of the absence of extraneous matter, and the presence of the *urates* it contains, which greatly enhance its fertilizing properties, this species of Poudrette is in far greater demand than the preceding.

The changes which take place in the contents of the reservoirs, while they are suffered to remain there, have not been studied with sufficient attention to justify any positive description. An active fermentation is developed, manifested by the constant disengagement of abundant large bubbles of gas, and that this and other changes exercise an important agency in modifying the properties of the materials, is obvious from the fact, that during the process, they lose their natural odour, and become notably altered in many other particulars. The extraordinary affinity of Poudrette for moisture, is another circumstance worthy of observation. This is so great, that when the atmosphere is very humid, moisture is attracted so actively by the heaps of this material, that they not only become violently heated by fermentation, but frequently at such times, take fire, and sometimes burn for a month or six weeks, unless the combustion be arrested by turning over the entire heap.

Such was the process for a long time employed in the conversion of the contents of the Parisian privies into Poudrette. The statements made at the commencement of this article, show the extent to which the business was carried upwards of twenty years ago.

and since then, it has probably been very much increased. The details of the several processes indicate numerous and serious objections;—such as the length of time consumed, the consequent expense, and the perpetual contamination of the atmosphere by the intolerable stench, which constantly exhales from the reservoirs during the different stages of fermentation.

To obviate these difficulties, to facilitate the process, and economise time, the experimental research of practical Chemists was some years ago called into requisition, with the view of ascertaining, if means could not be discovered, of immediately converting night soil into Poudrette, by the direct agency of disinfecting substances. Several procedures, having this end in view, have been proposed, and Companies have been organised, under patent, for carrying some of them into execution. One of the most successful of these is one discovered by M. M. Salmon and Payen, two manufacturing Chemists of Paris.

A commission, consisting of D'Arcet, Huzard, and Parent Duchatelet, appointed to report on the process employed by these gentlemen, has communicated some very satisfactory information in relation to the result. In presence of the commission, two buckets of the liquid contents of a privy were rendered so completely inodorous, in two minutes, by the addition of a small quantity of a dry, absorbent, carbonaceous powder, that a handful of the substance could be carried to the nose, without the slightest animal or fecal odour being perceptible. A slight ammoniacal smell was, indeed, all that could be discerned. The experiment was next repeated on an entire barrel of feces, and in five minutes, by the same process, the whole was as completely disinfected as in the preceding instance.* The reporters go on to remark, that it is not upon these small quantities that Salmon and Payen usually operate. They form immense basins, or excavations, with their disinfecting powder, and into these, large quantities of liquid fecal matter are thrown, and worked up by the operators, as a mason works his mortar. Notwithstanding the great amount of the material, the whole is, in the course of an hour, converted into an inodorous mould, and that too, without the disengagement of the slightest offensive smell during the process.

Unfortunately the Commissioners did not consider themselves authorized to reveal the composition of the disinfecting powder employed by M. M. Salmon and Payen; yet from a subsequent report made by a commission appointed for a different purpose, we derive such information as to leave but little doubt on this point.

To enable us to deduce our inferences from the language of the report alluded to, the following observations must be duly considered.

* Parent Duchatelet, *Hygiene Publique*, Tome ii., p. 207.

The disinfecting properties of vegetable and animal charcoal have been long known, and those substances have been so extensively employed on this account, that the latter, which is by far the most efficacious, has advanced very much in price, as have also bones, from which it is prepared by calcination. Both vegetable and animal charcoal are, however, far too expensive to admit of their being employed, either for agricultural purposes, or the conversion of night soil into Poudrette.

The following observations will enable us to draw some inferences relative to the discoveries of Salmon, and his important process alluded to above. His attention was attracted to some soft mud, which had been deposited by the river Seine, immediately below the mouth of one of the principal sewers of the city. It occurred to him, that this substance probably contained a large quantity of animal and vegetable matter, in such a minute state of division, as to render them imperceptible by the ordinary means of observation, and that by burning, the disinfecting qualities proper to animal and vegetable charcoal might be imparted to these materials. The experiment was accordingly made, and the result so far transcended all expectation, that immediately an extensive factory was established, the processes of which were predicated upon the principles involved in this discovery. Since that period, enormous quantities of night soil, collected from the city of Paris, and the surrounding villages, have been annually disinfected, and converted into Poudrette, by the use of the disinfecting powder thus economically obtained.*

Here then we have the important part of the secret of Mr. Salmon and Payen's process. Animal and vegetable charcoal are the agents by which they have been enabled to achieve such important results, and this, it appears from the above remarks, they obtained by burning the slime or mud, disgorged from the common sewers, which abounds with both vegetable and animal matter in a state of minute division.

But as these gentlemen were secure in a monopoly, by a brevet of invention, which threatened destruction to the interests of the old establishment at Montfaucon, the aid of scientific Chemists was immediately called into requisition, to discover, if possible, some other agent equally efficacious with that employed by Salmon and Payen. Numerous experiments were accordingly instituted by Alphons Sanson, and others, which resulted in ascertaining, that the cinders of turf, carbonized turf;—the simple *debris* of this substance; saw dust; common tan bark, taken from the vats of tanners; and surface soil (*terreau de couche*,) may be effectually employed for disinfecting night soil, and converting it into Poudrette. It was likewise discovered, that by mixing a small quantity of fecal

* Parent Duchatelet, Tome ii., p. 393.

matter with argillaceous earth, and burning them, a most active disinfecting agent was obtained:—a result which fully confirms the value of the means employed by Salmon and Payen, since night soil is composed almost entirely of a mixture of animal and vegetable matter, and the product resulting from their calcination, would be, of course, animal and vegetable charcoal.

Now, with these data for our guide, let us look around us and see if we cannot discover numerous sources, from which this disinfecting agent may be abundantly and economically obtained. Of tan, saw dust, &c. there is no scarcity. Of slime or mud, saturated with animal and vegetable matter, we possess an inexhaustible store in our docks, and about the outlets of our common sewers. If this could be appropriated to agricultural purposes, the city would be relieved of a most fruitful source of pestilence, and the proprietors of the wharves, of a most burthensome expense. Of peat or turf, we have none in our vicinity, but if I mistake not, we possess a substance of far more value, and in such quantity, as to be always obtained without limit, and at no more expense than would be incurred in collecting and burning it. I mean the turf of our salt marshes. In the immediate vicinity of our city, we have thousands of acres of these lands, the whole surface of which is thickly matted, to the depth of twelve or twenty-four inches, with the roots of marsh grass (*spartina cynosuroides*;) while the mud itself forms a rich, black, cohesive mass, of many feet in depth, the valuable fertilizing properties of which have been long known and appreciated by our sea-island cotton planters. Besides alumina and silex, this substance abounds more or less, according to locality, with animal and vegetable matter—the latter derived from various marine animals and their exuvia, which through a series of centuries, have become incorporated with it. The chloride of sodium, and other saline materials, existing so abundantly in marsh mud, would add, in no inconsiderable degree, to its disinfecting and fertilizing properties.

Inasmuch, therefore, as we are not in this country barred by M. Salmon's brevet of discovery, from the use of his process, with such illimitable resources before us, we must be dead to a sense of our own interests, if we suffer them longer to pass unappreciated. In the night soil from our privies; the filth from our docks; and the wide domain of fertility spread before us by our neglected salt marshes, we possess the means of rendering our barren fields as rich as the delta of the Nile or the Mississippi; yet for the want of a little energy and enterprise, we are content to live in a state of dependence upon others, for most of our ordinary means of subsistence, while our worn out fields are resigned to briars and fennel, and our few miserable, half starved, and dwarfish cattle are left to glean a scanty subsistence, as they best can, from a parched and stunted vegetation.

It may be replied, in answer to all this, that the evil is sufficiently obvious, but where is the remedy? I think the one as obvious as the other. The great obstacle is our own indolence, our want of energy, or a disposition to sit down quietly, and while we neglect the gifts that providence has spread before us in profusion, console ourselves with the assertion, so oft repeated, but every day falsified, that our climate is uncongenial, and our soil unpropitious. Look abroad to the sandy planes of Flanders and Holland. What countries on the face of the globe are more productive? and where will you find the arts of tillage carried to a higher pitch of perfection? Why is it so? Surely not because the soil was originally rich and fruitful. Not because its occupants were content to seat themselves down quietly and trust to seasons and showers to bring forth fruits from a soil too poor to furnish them with food; but for the obvious reason, that unlike ourselves, their natural wants impelled them to look about for means of ameliorating their condition; their energies were roused, their enterprise was awakened, and the most gratifying success has crowned their exertions. So would it be with us, could we be moved by the same impulses. Our resources are far greater than theirs, and the circumstances under which we are placed, are infinitely more auspicious to success.

I have already alluded to the value of our salt marshes. As the importance of marsh grass and marsh mud, as a manure, is generally understood, I do not propose to suggest any thing on that head. But I may be permitted to make a new proposition in relation to the use of the materials derived from this source, and this proposition may be considered as having a two-fold bearing:—first, upon the preparation of Poudrette; and second; the direct application of a valuable fertilizing agent to our worn out soils.—In neither relation, is what I propose, designed to supersede the employment of salt marsh, as manure, in the ordinary way, but to provide an important additional means of making our lands productive.

I would propose, then, that those who are engaged in agriculture along our sea-board, would avail themselves of every opportunity that offers during the warm months, of cutting the common turf of our salt marshes, and carrying it out to some near and convenient spot, there to be thoroughly dried until winter, when it might be readily stacked up, like an ordinary brick kiln, and by the aid of a little brush wood, or common wood, thoroughly burned, and thus reduced to a condition, in which it would either serve for the disinfection of night soil and its conversion into Poudrette; or if spread upon our fields, as a means of imparting a high degree of fertility to the soil. Almost every element that would remain as the product of this combustion, has been proved by universal experience to be an agent of fertility—thus we have alumina,—clay in its native state is known to be a valuable ingredient in soils, and burnt clay has long been used as an important means of amelioration.

Salts of potassa, and soda would exist in considerable quantity in the residue; also lime—perhaps magnesia, oxide of iron, and silica, besides a considerable quantity of carbonaceous matter, animal as well as vegetable—the amount depending partly upon the point to which the burning might be extended. Now it is obvious at a glance, that by burning salt marsh turf, we should obtain an abundant product, comprising within a small compass, most of those agents which have been found by experience to prove most efficient in imparting fertility to impoverished soils, and with this additional advantage, that these materials would be completely divested of all extraneous and useless substances.

I may be allowed to indulge in a few remarks, relative to the advantages of this process over the ordinary method of manuring with marsh mud.

In the common mode of using this material, it is either taken direct from the marsh, and spread in its fresh state upon the field; it is carried out, and thrown into heaps, there to dry and become mellowed by time; or it is conveyed to the compost heap, and worked in with other materials. Whichever of these courses is adopted, there is necessarily a great expenditure of labor, of both man and beast, and consequently a great loss of money, as labor and time uselessly expended, must be regarded by the agriculturist as a pecuniary loss. When the fresh mud is spread directly upon the field, the horses and mules are broken down and exhausted by transporting tons of water incorporated with the mud, which serves no useful purpose, but speedily evaporates into the atmosphere; and in addition to this, the material concretes into masses which cannot be worked uniformly into the soil. In the second method, the mud must be first carted from the marsh to the heap, and afterwards be again thrown into the carts to be distributed upon the fields. Now here the objection relating to superfluous water does not hold, but there is double labor for man and beast; a great consumption of time before the material can be rendered available—months being requisite to effect the necessary changes in the heap; and after all, the carts and animals are burdened with a mass of extraneous and useless matter, while in that which is really useful, there is an absence of many of the most valuable elements of fertility, which are either added or greatly improved by burning. Nearly the same objections apply to the method of passing the mud through the compost heap. Like the preceding, it involves the same loss of time and labor, besides which, there is a deficiency or absence of many of those ameliorating principles which may be developed in salt marsh turf by burning.

By the method I propose, most of these difficulties are obviated, while many important advantages are gained. If a proper situation be selected, where of course the mud is of the best quality, and

thickly matted with roots of marsh grass, with a common spade the turf can be most readily cut into masses of a cubic foot or more in size, a considerable proportion of which would consist of vegetable matter. These could be easily transported to the nearest dry land in barrows or otherwise, and then spread out like bricks, to be thoroughly dried. In the summer or fall months, when the sun has power, the season is dry, the only time at which marsh can be collected—these masses would be so thoroughly dessicated in a few weeks, as to burn as readily almost as common peat. They might be submitted to this process in various ways. The dry turf might be stacked, as already suggested, after the manner of an ordinary brick kiln, having furnaces at suitable distances, for the introduction of wood or brush, to give the fire a start, and maintain a draught. It might be piled upon brush wood, logs, or other combustible matter, and burned like oyster shells; or an arrangement might be made of pits, logs, &c., such as is used for burning clay, and the turf added as the combustion proceeds.

By either procedure, the expense of collecting the turf, carrying it out, drying and burning it, could not be greater than that of the double loading and carting of the native mud. For the sake of argument, I will suppose the time and expense in the two cases about equal, though when the wear and tear of horses are considered, I believe the advantage would be greatly on the side of burning. The following are a few of the advantages referrible to the latter process. 1st. We get clear of all extraneous and useless matter, and consequently of the labor, time, and expense of carting. 2d. We obtain, in a comparatively small volume, a light, impalpable powder, composed entirely of the most valuable agents of fertility, and nothing that is useless or injurious. 3d. We save at least three fifths of the labor and expense of cartage and distribution, and as the material is light, concentrated, and in a state of impalpable powder, it will bear distant transportation at a slight expense; a smaller quantity will suffice, say, one-fifth—it can be distributed broad cast, or in drills, as easily as lime, plaster or ashes, and we get clear of all annoyance from clods, and from the tedious and laborious process of spreading mud. 4th. Being so light and friable, it would incorporate readily and uniformly with the soil, and as all its elements are in a condition to be immediately appropriated to vegetable nutrition, they prove at once efficient, without that delay which is taken up in fermentation and decomposition, which must take place when the crude material is used. 5th. By burning, many valuable principles are developed, which do not exist, or exist but sparingly, in the mud. These are, lime, from the shells of molluscs, and crustaceous animals;—soda, potash, and more or less carbonaceous matter, (animal and vegetable charcoal,) derived from the combustion of the animal and vegetable substances existing in the mud—not to mention the improvement impressed upon

other constituents, especially the aluminous earth, by the agency of fire. 6th. If I be correct in the assumption, that one part of this substance is equivalent to five parts of the crude material, it follows of consequence, that by using it, we save four-fifths of the labor of men, carts, and horses, while we secure the additional advantage of possessing a manure that can be transported a considerable distance, which marsh mud cannot be in any of its conditions.

But there is another application of which burnt salt marsh turf is susceptible, perhaps more important than that indicated above:—the conversion of night soil into Poudrette. I have already detailed the principal circumstances relating to the valuable discovery of Salmon, and stated that the whole secret of his process consists, in the application to the substances to be disinfected; night soil—the carcasses of dead animals—in short, all animal substances in a state of putrefaction—of a dry, dark colored, antiseptic, absorbent powder, obtained by burning such materials as contain a large quantity of animal and vegetable matter. The product of this combustion is, of course, animal and vegetable charcoal, potash, lime, and other salts. Whenever these products can be obtained economically, and in large quantities, the material furnishing them may be advantageously employed in the conversion of night soil into Poudrette. I have suggested the mud of our docks; the drainage from the common sewers; and the turf and mud from salt marshes, as sources from whence might be obtained, at an inconsiderable expense, any quantity that might be desired, of a disinfecting powder, analogous in all respects to that so successfully employed by Salmon and Payen, and perhaps superior to it, on account of the greater abundance of saline constituents which would exist in the products of these substances.

As we are, therefore, so abundantly supplied with the most invaluable fertilizing agents in nature, let us inquire for a moment, how they can be rendered available. Of the means of obtaining the disinfecting material I have already spoken with sufficient detail. It only remains, therefore, to offer some suggestions relative to the best means of collecting and transporting night soil, and afterwards bringing it into a state fit for agricultural purposes—or, in other words, converting it into Poudrette. The means of fulfilling these ends may be considered, either as objects of united effort, as by a joint stock Company, or of individual enterprise,—each farmer collecting night soil for himself, and submitting it to the requisite preparation. In either point of view, the subject is one of immense importance, and in whatever manner the end should be obtained, the consummation would secure the two-fold blessing, of an amelioration of the public health, and the conversion of our barren fields into a soil possessing the highest possible degree of fertility.

Of the scheme of a joint stock Compahy I shall at present say nothing. Yet I entertain the belief, that such an enterprise, if properly conducted, would, after a short time, be found infinitely more productive than most of the fashionable schemes of the day. I propose, at a future time, to offer some suggestions relative to the disposition, by the City Council, of the offal, which they at present most strangely appropriate to filling up streets, thus not only creating a most intolerable nuisance, but absolutely building up so many hot beds of pestilence. I shall then propose some means by which, not only this offal, but also the contents of the privies, and the carcases of the numerous dead animals which now convert our commons into a perfect Golgotha, may be disposed of more advantageously and economically, and even converted into a source of revenue.

Omitting these discussions, the present inquiry is narrowed down to the consideration of the most advantageous means by which farmers themselves can employ night soil, for the purpose of manuring their lands. I would propose the following plan.

Let each farmer, in the vicinity of the city, have a pit dug, of the requisite dimensions to contain all the night soil and urine he can collect. This should, if possible, be excavated in a stiff clay soil, and the bottom should be rammed. In the absence of such a soil, the pit might be lined with boards, or with bricks and plaster. Into this, the materials should be thrown, as collected, and the disinfecting powder added as often as necessary, the whole mass being thoroughly stirred from time to time, until converted into a dry, almost inodorous material, or Poudrette.

As regards the collection of the night soil and urine, less difficulty and expense would be incurred, than in the present system of collecting and carting stable manure. For transportation, a water tight box of proper size might be mounted on a common cart; or tubs, as employed in Paris, might perhaps prove more convenient. Ordinary casks or barrels sawed in the middle, which cost almost nothing, would answer very well. Those into which the liquid contents are thrown, should have a circular float to fit inside the tub, to prevent splashing over, in consequence of the motion of the cart. The others might also have covers fitted to them, to conceal their contents and render the freight less offensive.

The privies might be very easily emptied, without the necessity of a man descending into them, by means of a kind of scoop, consisting of a strong wooden bucket, fastened somewhat obliquely upon a long handle. If a semi-circular iron rim were to be fixed upon the edge of the bucket, opposite to the handle, the instrument would operate more efficiently upon the more solid parts of the sinks. By means of this simple contrivance, the whole contents of a privy could be easily scooped out, and transferred to the tubs, or

the body of the cart, or if a large proportion of the material were fluid, a small copper hand pump might be advantageously used, the scoop being only employed to collect the more solid parts from the bottom.

These suggestions are of course designed to apply to the present arrangement and construction of our privies. A regard to public health, and general comfort, should, however, impel the City Council to take measures at once, to abate an intolerable nuisance. A different plan of construction should be devised, and rigidly enforced in every instance. And as a part of this improvement, every privy should be required to have, instead of a sink, a vessel, or vessels, of such size and construction, as to be readily removed when full, and replaced by another, the first being emptied and put in a state of readiness, to be used again, as soon as required. These could be made to slide under the seat of the privy, through a door or opening made for the purpose, and might be easily removed when full. Arrangements might be made by private families, and proprietors of establishments, with farmers, to send their carts or waggons at proper periods, to remove these tubs or boxes when full; or if night men were to be employed for this purpose, the cultivators of the soil would find it their interest to contract with them at proper rates, for the delivery of the material. In this way, all the farmers in the vicinity of the city could receive an abundant supply of a material, far more valuable than stable-manure, at a less expense than they have to incur in the purchase, collection, and cartage of that substance, while they would save no inconsiderable share of the time and labor of hands, and the wear and tear of horses and mules. Should the sphere of operations be made more extensive, then it would be necessary that persons should be employed specially for the manufacture of Poudrette, and the scheme would have to be modified in many particulars.

Now let us inquire into the probable amount of night soil that could be furnished by the city of Charleston, in the course of a single year. Unfortunately, there are no data upon which a positive estimate can be predicated. If, however, we assume the city of Paris as the basis of the calculation, a sufficient approximation to the truth may be made, to show the interest of the subject. It appears that the medium annual amount of night soil conveyed to Montfaucon, in the three years, 1810, 1811, and 1812, was 16,625 loads, or 498,750 tubs, thirty tubs being estimated as a load. Now, taking these data, and assuming the population of Paris to be 800,000—that of Charleston 40,000, we should have furnished by Charleston, in one year, at this rate, 832 loads, or about 25,000 tubs of night soil. But as this calculation refers to a period, when Poudrette was consumed to a very limited extent, compared, to the present rate of consumption in France, we may assume, that not more than one tenth part of the night soil of Paris found its way to

Montfaucon. By applying this calculation to Charleston, we should have, instead of 832 loads, 8,320, or 247,600 tubs, furnished in the course of one year, taking it for granted, that the privies were to be so modified, as to prevent the loss of the urine by percolation.

I have no means of ascertaining the quantity of Poudrette that could be obtained from this amount of night soil. But as 70,000 sacs of Poudrette were sold from the voirie of Montfaucon in 1818, if we assume this as the basis of a calculation, Charleston ought to furnish 3,500 sacs, which, at the medium Paris price, 8 francs per sac, would amount to 28,000 francs, or between five and six thousand dollars per annum. If it be assumed, that not more than one fifth of the night soil was thus appropriated in 1818, four fifths must be added to the above sum, as the actual amount that could be produced by Charleston in one year, so that instead of five thousand dollars, twenty thousand would be the value, in round numbers.

That this calculation is not overdrawn, will be obvious on a moment's reflection. The population being 40,000, estimating the total product at twenty thousand dollars, we only allow that of each individual to be fifty cents, in the course of the year, or one third of a sac,—certainly far below the actual amount. Besides, if the method of preparation which I have proposed, were to be adopted, the use of the burnt salt marsh turf, or any other analagous disinfecting agent—at least one third should be added for the amount of this material employed, which would swell the aggregate sum to thirty thousand dollars per annum. In making this calculation, it must be borne in mind, that the disinfecting material is not less valuable as a fertilizer, than the night soil itself.

But to show still more forcibly the importance of Poudrette, it will be proper to make an estimate of its value, compared to that of stable-manure. To do this, I shall suppose the case of a farmer, resident within two miles of the city, who wishes to manure twenty acres of land. Stable manure would cost him in the city, not counting the trouble and loss of time incurred in collecting it, twelve and a half cents the single horse cart load. Suppose a man, with a horse, could haul four loads a day, by the time it should be delivered on his farm, it would cost him at least fifty cents per load—and I know of no experienced farmer on the neck, who would estimate the cost below that. At this rate, suppose he put forty single cart loads to the acre, to manure twenty acres would cost him four hundred dollars. In the neighborhood of New York, where Poudrette has been used within a few years, it appears by the statement of D. K. Minor, President of the New York Poudrette Company, that from thirty to forty bushels are applied to the acre, and that thirty bushels are equivalent to twenty loads (of a two horse cart,) of stable manure. I will assume forty bushels of Poudrette to the acre, as the basis of calculation, and the price

thirty-five cents per bushel, (the rate at which it is sold by the New York Company.) Eight hundred bushels for the twenty acres, would therefore cost \$280, and if we allow twenty bushels to the cart load, there would be forty cart loads, which at thirty-seven and a half cents per load, would amount to \$15. This added to \$280, would make the total expense of manuring twenty acres with Poudrette, \$295. Thus, there would be a clear saving of \$105 in manuring this quantity of land, by using this substance instead of stable manure. To this must be added the value of the services of a horse and hand, in carting seven hundred and sixty loads of stable manure, equivalent to one hundred and ninety days, which, at one dollar and fifty cents per day, would be \$285, saved by substituting Poudrette for the stable manure, not to take into account the wear and tear of horses, which on our sandy roads is very great.

If a greater distance be assumed, the advantages of Poudrette become still more obvious. Common manure will not bear transportation more than three or four miles, and to the utmost of that limit, only for the use of the market gardener. Poudrette, on the contrary, being in comparatively small bulk, may be conveyed in barrels, or bags, by water, and rail road carriage, almost any distance, and even then yield a profit. Thus, it has been repeatedly shipped from France, to the West Indies, after incurring the heavy expense of land carriage at home, from Paris to the nearest shipping port. By our rivers, inlets, and rail road, therefore, almost every part of our State could be supplied, and it could be conveyed to the neighboring islands, at so slight an expense, that were arrangements made for its production, in adequate quantities, these regions might, in a few years, be made as fertile as a garden, while the time and labour now consumed in collecting marsh and other species of manure, could be appropriated to other work on the farm or plantation.

But to ensure these advantages, it would be necessary that arrangements should be made for the preparation of the material on a large scale. This is a consummation which it is feared will not soon be realized. But in the absence of such arrangements, the farmers near the city would find it to their advantage, to imitate those of Flanders, in each one having a pit provided for the reception of night soil, where he might readily submit it to the preparation necessary to convert it into Poudrette. Should he not be disposed to adopt any suggestion, for obtaining an agent to effect this conversion from the sources indicated above, he would find in ashes and lime, a ready, but inferior means of accomplishing the necessary preparation. The best unslaked stone lime can be purchased at a dollar and a half or two dollars per barrel. This, when slaked, I have been informed by a gentleman who has made the experiment, will yield, if good, from ten to fourteen bushels. At this rate,

lime would be sufficiently economical for the purpose here indicated, and if on adding either it or ashes, in sufficient quantity to the night soil, the mass should not be rendered adequately pulverulent to be applied to the soil, the requisite preparation might be completed, by throwing in top soil from the fields, or vegetable mould. Even clay would be found very efficacious in bringing night soil into a proper condition to be applied to the soil. Allusion has been made above to this property. A manure prepared in this way, is sold in the neighborhood of Paris, under the name of *Stercorat*, at a very high price. It has been found so valuable, that the inventor, M. Loques, obtained a patent for the invention, from the French Government. In the preparation both the liquid and solid contents of the privies, are mixed with some earthy substance.* To the same mode of preparation, belongs the process for which Madame Vibort Duboul received a gold medal from the Royal Agricultural Society of France, and a patent for fifteen years. Her "*Alkalino Vegetative Powder*" is obtained by promoting an active fermentation in fluid excrementitious substances, and then adding slaked lime in sufficient quantity, to convert the whole into a dry powder.† This material is said to be very superior to ordinary Poudrette, on cold, light, and moist lands, extending its influence over the soil for several years, without requiring a repetition of manure during that period. Nearly the same plan was proposed many years ago by Sir Humphrey Davy. Plaster of Paris, could it be obtained at a cheap rate, would also form a valuable agent in the preparation of night soil for agricultural purposes. It appears, indeed, that a company was formed near Paris, as early as 1818, for the manufacture of a species of Poudrette, called *Urate*, which is prepared by commingling urine, or the liquid contents of privies, with Plaster of Paris. For this discovery, the inventor, M. Donat, received a gold medal. This substance, is said by a commission, consisting of Vaquelin, Dubois, &c., to be so powerful in its effect upon the dullest soils, that it should only be employed by skilful and discriminating farmers.

But perhaps the most effectual means of disinfecting night soil, would consist in the admixture with it, of pulverised charcoal. Wood is so abundant in some parts of our country, that this substance could be obtained at rates which would probably justify its employment in this way,—especially, as charcoal itself is one of the most valuable fertilizers we possess. Thus, by using it for this purpose, its valuable properties would not only be available as an agent of preparation, but also as a direct means of promoting fertility. It is stated, indeed, that a preparation of night soil has been lately imported into Scotland, and the North of England, from

* Quarterly Journal of Agriculture, No. L. Sept. 1840.

† Ibid.—p. 157.

Copenhagen, under the name of "*Owen's Animalized Carbon*," which has been found very beneficial on the turnip crop, when applied in the drill,* One ton, which costs £3, is said to be sufficient for one acre of land, and its effects have been found so salutary, that it is likely to supersede the use of bone manure.

Having pointed out some of the advantages of Poudrette, and several methods of preparing it, I shall conclude with a few reflections relative to the method of applying it, and the results of its employment, as a manure, for several different crops.

Employed for the crop of indian corn, at the rate of one gill to the hill, at the time of planting, poudrette was found by Dr. Josiah Bowers, of Smithtown, Long Island, so effectual, that six acres treated in this manner, yielded a product more than double that furnished by the remaining half of the field, although the soil was cold and clayey, and consequently not well suited to produce good corn without warm manure. In another field of ten acres, one half was planted in the same way, the other half without manure. Both parts came up equally well, but that which had been manured with Poudrette grew with so much more rapidity and vigor, that at the time of the second hoeing it was twice the size of the other.—At this time, the unmanured five acres had the same quantity of Poudrette scattered broad-cast, that had been applied to the other in the hill, and worked in with the cultivator. Although that which had been manured in the hill kept ahead for a few weeks, the other gained rapidly upon it after the application of the Poudrette, and at the time of cutting up, no difference could be perceived in the crop. He remarks, in a subsequent communication, that one gill put into the hill, will produce blades of the finest dark, green color, and of an early, rapid growth, even when the soil is light, and nearly exhausted by previous cropping. The experiments of several gentlemen—Messrs. Blydenburgh, Mills, Potter, Fleet, and Smith,†—with Poudrette on the corn crop, furnished results equally satisfactory. Comparative trials with Poudrette, hog-pen manure, compost, fish, and yard manure, were made by these gentlemen, and in every instance, where the first was used, the crop was equal, and in several instances, superior to that produced by the other substances. In some of these experiments, half a pint, and even a pint of Poudrette was put into the hill, but where a pint was used, the product was not greater than where a gill was employed. It is even supposed that this large quantity tends to affect the germination of the seed injuriously.

In their trials with Poudrette on oats and wheat, at the rate of from thirty to forty bushels to the acre, these gentlemen obtained

* Quarterly Journal of Agriculture, No. L. p. 160.

† New-York Farmer Extra.

results equally satisfactory. Compared with the best stable and compost manure, in the ratio of one bushel of Poudrette to the cart load of manure, the product from the former was always equal, and in some instances superior to that furnished by the latter substance. In one case, in which ten bushels to the acre were applied for buckwheat, the result is represented to have surpassed all expectation, while an adjacent piece of land which was not manured, did not yield half a crop.

It has been drilled by several gentlemen, with turnips and ruta бага, at the rate of from forty to fifty bushels to the acre. Dr. Bowers states, that his turnips grew so large under the use of Poudrette, that he could not find sale for them in the market; and Mr. Blydenburgh remarks, that he sowed half an acre of turnips, after applying forty bushels of Poudrette, and another half acre, where forty-two bushels had been applied, the first the last week in July, the last the first week in August. The product was six hundred bushels to the acre, of turnips of uniform size, excellent quality, and fully equal to any raised in the vicinity. In the limited trials which have been made in England and Scotland, on the turnip crop, Poudrette has been found fully equal to bone manure. In an extensive experiment made by Mr. Beach, of Oakely Hall, in which Poudrette, bone manure, and stable manure were employed for the turnip crop, no difference could be perceived,* the Poudrette proving equally effectual with the other articles.*

Similar testimonials could be adduced in favor of Poudrette for many other crops. Wherever it has been employed, either in field or garden culture, its effects have been truly astonishing. Indeed, for all garden vegetables, it seems to be superior to every other species of manure. Its influence is always manifested from the first,—the plants growing off at once with astonishing vigor and luxuriance, taking the lead in these particulars, of those which have been manured with other substances.

Sufficient, I trust, has now been said, to shew that night soil and its product, Poudrette, is entitled to the consideration of our farmers; to prove, that in point of fertility, it is at least equal, if not superior, to other species of manure; and that on the score of economy, facility of application, and portability, it possesses great advantages over almost every other fertilizing agent. In addition to these considerations, it is hoped that the foregoing observations may prove useful, by furnishing information relative to the processes for the preparation of night soil, which has been strangely withheld by those capable to impart it, notwithstanding repeated calls have been made through the Agricultural periodicals of our country.

Happy, shall I be, if this, my second series of Notes and Reflections, shall engage the serious attention of even one lover of

* Quarterly Journal of Agriculture, No. L. p. 159.

agriculture. I would fain hope that he would have an influence upon another, and that in this manner, a spirit of improvement might be awakened; and new enterprises developed; leading to the institution of valuable experiments; which, while they would tend to clothe our fields, and our meadows, with luxuriant crops, and fill our granaries with plenty, could not fail to impress us more forcibly than ever, with the wisdom and beneficence of the Creator.

A SOUTHERNER.

For the Southern Agriculturist.

ON THE CULTURE OF RICE-GRASS.—*LEERSIA ORIZOIDES*:

BY C. C. PINCKNEY.

Pendleton, October 21, 1840.

Mr. Editor:—In the hope of inducing some of our farmers to turn their attention from the exclusive cultivation of cotton, to the improvement of stock, I send you the result of eight years' experience in the culture of hay, on a piece of meadow land, one mile distant from the village of Pendleton. Two branches, whose united streams is sufficient to turn a small grist mill, are kept continually running over the meadow, except during harvest. A day before cutting we remove a small obstruction placed in the natural channel of the branch, when the water leaves the land sufficiently dry for the mowers to work, and a narrow wheeled two horse wagon to take off about 800 lbs. at a load. Immediately after harvest, the bar is replaced across the channel in a few minutes, by drawing mud against a rail laid over it, and the land again put under water. Having made abundant crops of hay several years, at so little expense, I last year laid off one acre, had the wagon carefully loaded by a white man, directing him to make every load as near as possible of the same size, and on weighing one load, found the average product of the acre to be more than three tons, of two thousand pounds each, at the first cutting. The same directions were followed this year, and the product was more than four tons at the first cutting. This greater product may be attributed to a late harvest, and a summer of more rain.

The soil on which these crops were made, is the ordinary quality of low land, near the creeks, overflowed only by high freshets. It had been cleared and cultivated several years, producing good crops in dry seasons. I first saw it in 1831, when the corn on it was nearly destroyed by a wet season; in '32 it produced more weeds than grass; they were all mowed—in '33 I was astonished by the product of hay, which has been good ever since. This hay is made from the rice-grass, the "*Leersia Orizoides*" of the botanist, called Nimble Will, in the upper country; it has a fine thin stalk,

covering from four to five feet in length, but not being erect, it does not stand more than three to four feet on the ground, no part of the stalk is one-eighth of an inch in diameter, they have been measured more than six feet long. It grows well on the low grounds of branches, and may be found in every part of the State: it is killed by frost, and does not grow in the interior, before May.

I have made various experiments with red clover, herd's grass, orchard grass, and timothy, the two former on wet and dry soils; after two or three years they have been overpowered by the native weeds, grasses, briars and shrubs, which spring up spontaneously when the soil is unbroken. The single enemy of the rice grass is the rush, large and small, which appears to be the only noxious growth of land covered by running water, and this is so entirely outgrown by the rice-grass, that notwithstanding its formidable appearance in the spring, I have taken no measures to eradicate it. By the end of June the rush is so completely covered by the grass, that it is scarcely thought of until the ensuing spring. One great advantage of this grass is, that you can choose the time for cutting, as it does not blossom early. Towards the end of July it seems to settle or lodge in spots, but I am not aware of any injury that results. We commence mowing with a briar scythe, the first fair weather after oat harvest,—the task is a quarter of an acre for the mower; one woman can toss and turn half an acre, which should be done as soon as it is cut, and put up into cocks by evening. When the dew leaves them next morning they are opened at the top, and after an hour's sun on them, all the hay cut before twelve o'clock of the preceding day, may be carted home and put away. Eight or twelve hours sun is sufficient to cure the hay, if properly tossed and turned immediately after cutting, which is easily done with a wooden hay fork. An iron fork is used for loading and unloading the wagon.

The bloom and seed appear late in September. A few days before we expect frost, a second crop is cut and harvested. As this occurs at a busy period in October, we have never measured or weighed the product of an acre; it has been variously estimated at a third or half of the first cutting.

I have never made any comparative experiments of the nutritious qualities of this hay, but have been informed that it sells in the Columbia market as readily as northern hay. One of our most experienced farmers told me that he preferred it to corn blades when wagoning to Hamburg.

Yours, respectfully,

C. C. PINCKNEY,

For the Southern Agriculturist.

PLAN PROPOSED FOR RAISING HOGS—BY H.

OUR Yankee neighbors were the first to originate and carry into practice this important truth, "that some things can be done as well as others." If among other importations we could secure some of this staple, the secret of all their prosperity, and transplant it successfully into our more general climate, we would be well recompensed for our trouble. Providence has been bountiful to us. We have ample resources, but we want energy. It is mortifying to our pride, but nevertheless true. "Although fortunately located in a geographical point of view," writes our excellent President of the State Agricultural Society, in his late address—one who has ever been first and foremost in his praiseworthy efforts to stimulate the sluggish agriculture of the State—"and bountifully assisted by Providence, yet South Carolina as an agricultural community, is not in the condition which her immense resources and the enlightened character of her population could so readily place her. If with one fourth of her richest lands in a state of nature, and large and fertile tracts abandoned by their owners, if under a system of husbandry notoriously defective, she is still able to maintain her rank as among the first, if not the actual head of the Union, in regard to the value and variety of her domestic productions, how wonderfully increased would be her wealth, her physical power, and the prosperity and happiness of her people, when, through the united efforts of her too long lukewarm and misguided yeomanry, the inducements to emigration, from conviction of self interest shall cease, and every portion of her diversified territory be subjected to the labour of the skilful farmer." If then under such discouraging circumstances we can still maintain the position we do, will not a little more well directed energy place us where we should be? Our grasses are of sufficient variety, and grow luxuriantly enough, as any young planter of one summer's experience can testify, and yet we have to purchase hay, butter, and cheese. Our climate is so mild and genial, that we can have a succession of root crops in the ground every month in the year, and yet the Kentuckians can afford to drive their cattle and hogs several hundred miles to supply us with these necessities of life. Our immense forrests of pine, the finest in the world, are comparatively neglected and yield us but little. Every occupation is made subservient to one great absorbing interest, which like Aaron's rod, swallows up all the rest.

There is not a more settled axiom in Agricultural arithmetic, than that the planter in order to become successful and thriving, must live within his own resources. It is cheaper for him to raise his own bacon and corn than to buy it. It is moreover the policy of the whole cotton-growing country, that it should be so. By

directing all the labour into one channel, the culture of cotton, an excessive crop is produced, and prices of course must fall; in turn, the other productions of labour being reduced in quantity, rise in value, and the result is that a large proportion of the cotton-crop goes to purchase the other articles that were neglected.

But I set out by saying that many things which appear difficult at first, upon trial are found easy of accomplishment, and although the exploit which Sam Patch undertook to illustrate its meaning, seemed incredible, and much more formidable than any proposition I shall lay down, he and several successful imitators have set the question beyond dispute. My proposition is that we can raise our own bacon, and save ourselves the annual tax we pay to Kentucky and Ohio for supplying us. I have no data at hand by which to estimate the number of hogs brought into our State and sold, and the quantity of bacon imported, but I venture to assert, it is the heaviest tax we pay for any single article of consumption. If then we can save this annual drain upon our resources, we have Dr. Franklin's authority for it, who always uttered important truths in familiar words, that we shall be that much the gainers.

In order therefore to arrive at this result, I will begin by laying down this proposition, which if not original, is at any rate so little practised that it has some claim to originality, viz. that hogs like every thing else in nature, must have food or they cannot live. We may import the improved breeds, the rooters and the grazers, the Berkshire or the Chinese, the Woburn or the No-bone, but if there is nothing to root and no pastures to graze upon, they will all degenerate into the razor-backs at last. After all I am inclined to believe that proper care and attention will do more to improve our stock than the best American or English breeds. I do not by any means condemn the improved breeds, for I believe with good treatment, they will do as well here as elsewhere, but I insist upon it, that without that treatment they will be no better than the others. I have seen our common breed at less than two years, weigh over 300 lbs. They were well attended to and fed regularly.

The Kentuckians have a country where grain of every kind is raised in abundance and with little cost. We can scarcely expect to vie with them in that respect, but is there nothing else left for us to substitute in its place? Here let us take a lesson from our Yankee neighbours, who have so clearly exemplified the truth of my text, "that some things can be done as well as others. When one occupation becomes unprofitable, they seek another. Seizing every production which nature has adapted to their climate, they have converted their cold and rugged soil into fields and pastures, yielding them more than sufficient to satisfy their own wants. Let us do the same. A kind providence has been lavish of its bounties to every climate and soil. We have only to look around and select those which are best adapted to our own. We have seen in

Europe and in our own country the great advantages of the root crop. Its culture is easy, and the yield perhaps greater than any other vegetable production. Any planter in the low country can testify that there is not a better food for fattening hogs than our sweet potato. There is an old prejudice that the fat is not as firm as corn fed bacon. I believe this is an error we have been led to adopt against our interest. I know many planters who never feed on any thing but potatoes, and find their bacon and lard as good as any other. We should not too hastily adopt an opinion to our injury, without becoming satisfied of its correctness. The potato season begins in September, and they will keep good enough for hogs, in the fields, until March. The vines should be stripped just before or after a frost. They make excellent fodder for cattle, and if well cured, will be eaten heartily by horses. After the vines are stripped, a little earth should be drawn upon the beds, which will protect them from the winter weather and keep them in a sounder state. We thus have been six months of the year provided for, by a root which we know to be good food, which is of very easy cultivation, and on moderate lands will yield from one hundred and fifty to two hundred bushels per acre. They require no further trouble after cultivation, for at eating time, each one does his own rooting. For the months of March, April, May and June, successional crops of turnips sown in August, September, October, and March, will supply them with a root which they soon become fond of. I am not prepared to say which variety of turnip will answer best for this purpose, but I have found the red tops, grow to a larger size than any other kind I have tried.* The Jerusalem Artichoke is spoken of very highly by those who have tried it, and could be used in the winter months, but scarcely later than March, as they begin to sprout at that time. The Ground-nut yields abundantly, and could be used in the winter and early spring months.

As soon as the oat crop is ripe, which will be about the middle of June, turn your hogs in and they will remain in good thriving condition until the end of August, which completes the year.

Should you own a piece of land well covered with nut grass; turn it to advantage,—sow your oats upon it and it will come in to supply the latter part of August when the oat crop is exhausted. But, friend, if you have none of this grass, by all means keep clear of it and let your hogs wait a week or two until the opening of the potato season.

I have thus thrown together a few hints by which we may save our bacon. Do not condemn the plan without trial. It will cost but little, and if at the end of twelve months you are not repaid for your trouble, give it up as one of the humbugs of the day and contract with the Kentuckians again for your supplies. H.

* The Ruta Baga would perhaps be found both more nutritious and productive.
[Ed. So. Agr.]

SYNOPSIS OF THE CULTURE OF RICE—ON BLACK RIVER:

BY THE EDITOR.

ON our way to Society Hill, we stopped a few days with a friend on Black River. It was not our intention to investigate the culture of Rice at that time, and although we had passed over the Santees, the Sam-pit, and stayed a few days on Black River, and moreover was at the very period when this could have been best done, yet as we had set out with a specific object in view, we were loth to abandon it, and therefore left the culture of rice for some future examination, when we propose visiting all of the rice districts in the same season, investigating the several modes of culture, and by bringing them together enable our planters to judge of the merits of each and avail themselves of such hints or details of practices as may be most conducive to their interest. But as it may be some time yet before we can perform this, we will here give the outline of culture, pursued on Black River. A more detailed account of which we are promised.

Open trench planting.—The ground is prepared by either ploughing, harrowing and breaking with the hoe, or dug and made fine with the hoe only. This depends on the nature of the soil, and the time at command. The ground is trenched by trenching ploughs, which makes five furrows at each time. The rice is first "clayed," that is, the rice intended for seed is spread out thinly on the threshing floor, and fine clay being mixed with water, to the consistency of white wash, is thrown over the rice, which is then stirred, and each grain becomes enveloped in a thin coat of clay. It is then fit for use, or may be laid by for a few days. This is only done when it is intended to sow in open trenches, for were it not done, the rice would float as soon as the water was put on, but being coated with clay, it retains its place in consequence of the increased weight from the moisture imbibed by the clay. The ground being properly prepared, the rice is sown in the open trench and not covered, but water is immediately put on, and the field kept in this state for about twenty days, or until the rice "floats," that is, the rice having grown so large that its specific gravity and the slight hold its roots have of the earth, are unable to overcome its buoyancy, and it is detached and floats on the surface of the water. As soon as a few of the plants are observed to be in this condition, the water is run off and the field dried. It is then hoed once or twice. When in the third or fourth leaf, (about the forty-fifth day from planting,) the water is again put on, "topping" [covering,] the rice for three days. It is then drawn down until the rows of rice are apparent. In twelve days after the field is dried and hoed twice, commencing as soon as dry enough. It will now be ready for the joint flow in about thirty days.

Some instead of drying it at the end of twenty days, merely "slacken" the water, so as to show the tops of the rice, and increase the water as it grows, so as to keep the tops of the rice merely visible for sixty days.

Covered Planting.—The following directions are given for thi: The ground being prepared as above, sow and cover the rice, put on the water until the rice is "piped," dry it, and keep it so until in the needle state, cover it with water for ten days, draw it down until you can see the tops of the rows.—Twenty days after dry it, and as soon as it is enough so, hoe it as often as possible before the joint or harvest water is put on, which will be in about from thirty to thirty-five days. When the joint flow is put on, the water is kept just below a white streak which is always seen on the stalks of rice just below the ear. When fit for harvest, (which is determined by the second or third lower grains being so soft as to be mashed with the nail,) the water is let in and out for several tides so as to wash out the fields entirely, which renders it less offensive (and of course less unhealthy,) while harvesting is being carried on. The task at this time is to cut a quarter of an acre and carry out a quarter. The quantity of seed used is two and a half bushels per acre. The usual average product is about thirty bushels per acre, the greatest average from fifty to sixty bushels. The largest quantity made, eighty bushels per acre. The usual weight of the rice is forty-seven pounds per bushel.

For the Southern Agriculturist.

OSAGE CORN.

THE subscriber obtained this corn from the Osage Indians, living on the River Neosha, an Indian name, for Beautiful River, "Ne," Beautiful, "Osha," river. On the fertile and rich bottoms of this River, this corn seldom exceeds the height of six feet, when fully grown, with a spindling stock. It shoots from the ground, and within a foot of the ground, bearing very long ears, of variagated colored grains. The Indians prefer this corn to the common corn, on account of its superior product, softness and sweetness. The subscriber planted some of the grains last summer in Abbeville District, (Só. Ca.) where it grew and produced well on a sandy soil, tolerably fertile. The proper distance to plant this corn would be two feet in the drill, and four feet apart, in rows. The Indians make what they call their sweet corn from this article, which is simply this: they collect the ears when in milk, boil them sufficiently to render them fit to eat, they then cut the boiled grain from the cob and expose it in the sun until perfectly dry, when they put it up in skin bags, and at any time during winter they boil a portion of this dried corn with or without buffalo meat, and no one could tell the difference either in

taste or appearance, to the roasting ear newly plucked from the field. It is an early corn, and ripens six weeks before the common corn. The flour is fine and fair.

THOMAS PIERCY SPIERIN,

Abbeville Dist. So. Ca.

[Nine thousand grains of the above corn have been left with the Editor for distribution, on the condition that one half of the product shall be returned to Mr. Spierin.]

METEOROLOGICAL OBSERVATIONS FOR 1840.

Taken near Robertville, So. Ca., Lat. 32°, 34', 48" N. Lon. 81, W.

MONTHS of the year 1839.	THERMOMETER.				BAROMETER.			WEATHER.				WINDS. most prevailing.
	Maximum.	Minimum.	Range.	Mean Tem'p. for the month.	Maximum.	Minimum.	Range.	No. of fair or Dry Days.	No. of Rainy or Cl'y. Days.	Greatest var'g. in 24 hours.	No. of Inches of Rain.	
JANUARY, ::	69	22½	36½	46	30.03	29.42	00.61	23	8	23	1.612	W. NW. NE.
FEBRUARY, ::	79	27	52	54	29.89	29.35	00.54	25	4	36	0.496	NE. SE. SW.
MARCH, ::::	82	35	47	60½	29.76	29.36	00.40	19	12	24	5.847	SE. NW. SW.
APRIL, :::::	88	43	45	65	29.77	29.62	00.15	15	15	28	2.921	E. NE. SE.
MAY, :::::	84	51	33	68½	29.82	29.40	00.42	21	10	24	11.294	NE. SE. N.
JUNE, :::::	94	60	34	74½	29.89	29.55	00.34	17	12	23	2.779	E. SE. WSW.
JULY, :::::	90	72	18	79½	29.80	29.58	00.22	4	26	16	7.150	E. SE. WSW.
AUGUST, ::::	88	71	17	77	29.78	29.46	00.32	3	28	7	9.073	E. SE. SW. NW.
SEPTEMBER,	84	58	26	70	29.83	29.21	00.62	21	9	00	0.781	E. SE. NE.
OCTOBER, ::	79	34	45	66½	29.27	28.92	00.35	21	10	20	0.822	E. NE. W. SW.
NOVEMBER, ::	74	25	49	50½	29.84	29.19	00.65	29	1	27	0.450	NE. NW.
DECEMBER, ::	72	23	49	48	29.94	29.42	00.52	27	4	36	0.666	NE. NW.
Annual Summary	94°	22½	71½	63½	30.03	29.19	00.84	225	139	36°	43.891	Easterly.

NOTE.—There might have been an inch or two more of rain than is specified above, as in June and July ten or twelve days observations were omitted in the diary. These omissions were unavoidable, and were the only instances where every particular was not daily recorded throughout the year.

In the Barometer, it was frequently noted that a rise of the Mercury preceded or was coincident with an Easterly wind, and vice versa, a fall to precede or attend a Westerly wind. Wet or dry, no immediate change would occur, the Mercury remaining stationary. None of the Almanac predictions of the Moon and weather, were found to result in the least uniformity.—None were weatherwise. One coincidence however, between the Moon and weather, which we have never seen noticed elsewhere, occurred ten out of twelve times the past year, and as often perhaps the year prior—which was this, viz: That when the young Moon is about 30° to 40° above the Western horizon, at Sun-set, the weather for the time is fair, clear, and settled—and the weather for twenty-four hours antecedent and subsequent, is usually the same. It will require a series of observations made in different meridians of latitude and longitude, to determine whether this is any thing more than an accidental coincidence, or a relation of cause and effect.

Statement of the Coldest and Warmest days in each Month of A. D. 1840.

MONTHS OF THE YEAR.	COLD ST DAYS.			WARM ST DAYS.			WINDS.	CHARACTER OF THE MONTHS.	INCIDENTS AND OBSERVATIONS RELATIVE TO FARMING.
	Sunrise.	2 o'clock.	Mean Temp're.	Sunrise.	2 o'clock.	Mean Temp're.			
Jan. 1, - -	32°	30°	29°	"	"	"	N. E.	Mild pleasant winter. No violent changes. Rather dry.	A fine season for farming preparations. Scarcely a day lost from bad weather. Very healthy.
" 30, - -	29	32	40½	60	64	62	N. and N. E.	Mild and very dry. Vegetation earlier than in any ten years prior.	This month showed the greatest extreme of tem. 33° in twenty-four hours.
Feb. 4, - -	"	"	"	"	"	"	E. S. E.	Less a Spring month than February.	Last killing frost on the 12th: last light frost on the 22th.
" 17, - -	42	57	44	59	74	66½	E. N. W.	Colder and quite wet.	On 20th ice, therm. 33°; and 27th frost, therm. 43°, killing tender garden vegetables; but fruit uninjured. 1st to 4th silk worms hatched.
March 12, -	49	47½	48	68½	82	75	S. E. S. W.	Beautiful and seasonable weather.	The whole month seasonable and fine for planting.
" 20, - -	51	70	60½	70½	82	76½	E. S. E.	Gardens and vegeta'n flourish'g finely.	Never saw Cotton crops come up finer. Healthy.
April 8, - -	"	"	"	"	"	"	N. E. N.	Unseasonably cool and wet. 19th to 27th drowning rains.	More rain in May than in the four months previous altogether, and very destructive to good stands of Cotton, nearly four inches in one day.
May 12, - -	60	78	69	72	84	78	W. N. W.	Seasonable but rather too cool, and too wet for Cotton	A second Yazoo fresh in all So. Rivers—totally destructive to all River crops.
" 4, - -	73	82	77	81	94	87	W.	A tropical season. Three or four days only of fair weather.	Fever began late in May, and progressed.
June 10, - -	74	80	72	77½	90	84	S. E.	Similar to July, only worse.	Great impediments to working crops from grass and rain.
" 28, - -	61	68	65	78	88	83	N. W. E.	Rains held up. Middle of the month very cool—rest seasonable.	The whole South and South Western country dreadfully scourged by fevers.
July 21, 22,	34	60	47	72	86	79	N. E. N.	First frost, of the 24th, most welcome.	Low grounds exhale a loathsome effluvia. The Caterpillar every where on Cotton.
August 8, -	"	"	"	"	"	"	E. S. E.	Delightful Indian summer weather.	Relapses very common from the universal prevalence of malaria.
Sept. 23, -	25	57	38	72	79	76	N. W.	Dry, pleasant and healthy.	Still fevers, but healthier. Season most delightful. Not a day lost from farming and harvesting. Rather too dry for small grain. Ponds very low.
Oct. 26, - -	"	"	"	"	"	"	N. W.	Not a loss day from bad weather.	Fine season for harvesting continues. Healthy.
Nov. 27, - -	23	48	35	62	74	68	E. N. E.	Very dry, fine pleasant winter.	About fifteen frosty mornings in December.
Dec. 20, - -	"	"	"	48	62	55	N. E. N. W.	Weather very healthy. No high winds.	

REMARKS ON THE METEOROLOGICAL TABLES OF 1840.

The year just passed had some distinctive peculiarities worthy of agricultural note, compared with 1839. The summer was less warm by 4° . The winter less cold by $3\frac{1}{2}^{\circ}$. There was less Barometrical range by 00 43 inches. There were thirty-two less fair days, and thirty-one more rainy days, and only about $5\frac{1}{2}$ inches more of rain, two thirds of which however, fell in the cropping season, which circumstance signally characterised the year as wet in the extreme. The annual quantity of rain was not excessive, and had it been more equally proportioned through the twelve months, might have resulted in a healthy as well as a fruitful year, which was quite the contrary in both respects. On the mean annual temperature of the two years, there was only a fractional difference. Such are the tabular resemblances of the two years, which are worthy of comparison, as their agricultural results were very unlike. The former year has been already noted as one of the greatest cotton-crop year ever known, the latter will be long remembered as a very short crop year for cotton. At similar periods in both years the seasons "in transitu," were anxious ones to the Planter. It was feared that the drought of '39 would bar all fruitful vegetation, while it seemed at several periods in '40, as if a second flood was about commencing. In both instances the results were more favourable than could have been anticipated; but is decidedly in favour of too little over too much rain, under similar good culture. To mark more especially the characteristics of the seasons of the past year, inspection of the tables will show the winter months to have been uniformly cold but mild and uncommonly dry. The spring commenced very early, more so than in any of the ten years previous. Such was the outset, but not so onward. February was warm spring weather, but winter again lingered in the lap of March. Peach trees which began to flower early in February had to run the gauntlet between frost and ice on the 26th and 27th of March, and pretty generally escaped injury. It is surprising how great a degree of cold this early harbinger of spring will resist in bloom. It will ordinarily escape a cold of 28° Far., and for ten years past we have not failed in a crop of this most delightful of all fruits. The latter part of the spring until late in June was unseasonably cool and wet,—the combined effect of both of which causes, operated perniciously upon the cotton crops. It favoured the propagation of the cotton lice, or aphis, which infested the plants very extensively at that period, when hot and dry weather usually destroy them. In short, I never saw at first, finer stands of cotton, (and other crops,) so favourable was April; and in the end, never saw them so marred; so unpropitious was May and June. The ensuing summer months were in keeping with the spring. July and August were wet beyond precedence since 1817, attended with frequent and severe tropical showers. A shower which

occurred on the 19th of May, of $3\frac{1}{2}$ inches depth of water, was exceeded by one on the 31st July of upwards of 4 inches fall, in an afternoon and night. It was a sorrowful sight, where the highest lands became boggy, or in common parlance, rotten from saturation of water—and when fields could not be ploughed for weeks, and every place, not a hill, resembled quagmires. Crops grew luxuriantly, and so did grass and weeds, which for a while it seemed impossible to suppress, and all kinds of vegetation became rank: every prospect of a harvest was now most gloomy. Prior to this the River Planters met with an irrecoverable stroke. On the 1st of June there occurred a most overwhelming fresh, in all southern rivers, totally destructive to crops on river lands, ordinarily considered safe, destroying also multitudes of Stock. On the Savannah river it was considered similar to the Yazzoo, of ancient memory, and was higher at Augusta, where the whole town nearly was under water; where carriage roads became channels for boating, and where the bridge connecting with Hamburg was almost completely swept away by the impetuous torrents. On the Oconee river, Geo., the Rail Road Company represent the fresh there as being five feet higher than the Yazzoo fresh, which occurred in January of 1796. The re-planted fields after the destruction of our late fresh, were too late under the most favorable circumstances, to produce even a half crop,—but the disasters were even yet not over,—the cotton had scarcely begun to recover itself, when almost simultaneously the caterpillar or army-worm appeared, and overspread the fields like hoards of Egyptian locusts, sweeping before them every leaf and tender pod. It was their first general visit here, on so extensive a scale since 1833. Fortunately this Septenius visitation was rather too late to injure the fruit much, otherwise the destruction of the cotton crop would have been completed. As it was, most of the fruit boles were sufficiently matured to escape injury. Although early in the fall, the plants were stripped of leaves and young fruit to the bare poles, and fields of hundreds of acres, seemed as if smitten by untimely winter long before a frost. The only impediments to the ravages of the worms appeared to have been thick swods of grass. It was observed that where grass greatly predominated (which was no rarity even on road-side fields,) there the caterpillar showed most favour. Amidst these various disasters to the planter no one could have been much disappointed in the harvest of cotton, which, however was even better than was anticipated. The cotton crops perhaps have averaged from half to one third of ordinary years. A few exceed this, but more fall short of it. It was observed that old lands, which had been long lying out, and was well attended, did almost as well as in more favourable seasons.

The provision crops were generally plentiful. Corn and potatoes particularly, abundant—but the pea crop failed in most places, except on very new and good land. The oat crop was

very fine; but the wheat, of which only a modicum is made for domestic use, was nearly a failure from the smut or black blast.— This was so general in diversity of soils, and in varieties of seeds, that the disease of the grain apparently must have had its origin in some common cause like that of the general cool and wet spring. The fall brought with it some compensation. The rains held up in September, from which period until late in December, the rains which fell were extremely light; scarcely sufficient in some neighbourhoods to bring up small grain. As a harvest season better could not have been desired. There was not a loss day in three months from foul weather, to intercept the housing and storing of the produce of the soil.

Fair, calm days, o'er withered fields,
Shone with an Indian's summer's Sun.

This was a providential occurrence, for disease and death had been so universally prevalent, that labourers were too few to have saved the crops, had the fall been much less propitious. As it was, every one had the fairest chance of relieving the utmost of the season's yield. And for this there is no small cause of gratitude to the ruler of the floods and fields, who never sends human afflictions but tempers them with some healing measure.

In allusion to the sickliness of the summer and fall, it will not be amiss to state some further particulars relative to the health of that period.

In all of our Southern country, very few localities excepted, a rainy year, a sickly year, passes proverbially as antecedents and consequents of each other; such was strictly the case, the year gone by. In many respects it was a repetition of 1817, and as such will be noted in the Farmer's Calendar, and many others besides, will look upon it as an era of sad recollection, from having undergone severe afflictions in their persons or families, with more or less distressing bereavements of friends or relatives.

The fevers commenced in June and progressed with the advance of summer; prevailing almost universally throughout every section with more or less fatality. In some localities contiguous to swamps or ponds, and not favourably drained, it assumed a malignity of character, not surpassed by Asiatic Cholera. Neither blacks nor whites were exempt, but as usual with our season fevers, it was incomparably more fatal to the whites, particularly if the subjects were young, and had never been partially acclimated by having had fevers before. To such, the disease proved awfully fatal.— Sometimes in 24 to 48 hours. In a section of twenty-one to thirty miles of circuit in St. Peters Parish, in a thickly scattered white population, there occurred to the writer's knowledge, at least fifty deaths of whites alone, amounting from one-fifth to one-seventh of that population. An awful degree of fatality, the mere recollection of which, should unite the whole physical energies of the inhabitants that remain, in effecting some sanatory measures to guard

against such a contingency in future. Yet such is the waywardness of man, that we seldom grow wise from experience.—We bury the dead, weep! and forget! Like the inhabitants of Naples, we build ourselves tenements over tombs of the dead, forgetting that the next eruption may make our new dwellings our graves.

Those who remember the floods of the past summer, in connection with the level surface of our whole country, its thick inter-spersion with flat ponds and basins, with little or no undulations of hills and valleys—every provision by nature for retention of moisture, with but scanty means of art for draining off surplus quantities—they who view these circumstances connectively with the neglected condition of most pine-land residences for health, will not wonder at the result. Such extensive surfaces of water as were held by underdrained lands, ponds, gullies and basins, filled with rank and decaying vegetation, were constant reservoirs of mephitic vapours—laboratories of malaria, which constantly saturated the purer air around with its poisonous effluvia, spreading far and near. So common and extensive was its prevalence, that even the public roads was infected with a most noisome stench.

There are a few practical lessons to be drawn from the foregoing facts and remarks, which we will briefly state.

Planters should always prepare their lands for cultivation, as anticipating a wet season. Should it prove dry, they will fare none the worse. They should endeavour to render their settlements and residences as free as possible from the effluvia of stagnant waters, by deep draining of the sub-soil, through all contiguous fields as well as woodland forests. The united advantages from improved health, to the proprietor and his operatives, and the increased value of the lands either for cultivation or pasture, when rendered dry, will in the long run, compensate for the most liberal outlay bestowed on this object. Except fevers from our Bills of Mortality, and there is no country subject to fewer diseases than ours. Divest the Protean monster malaria of its noxious influence and there is no land more to be desired for living in, and more favourable to longevity and a rapid increase of population than ours. As it is, human life here is less than the allotted span, and the best of us begin to decay before we grow old; and at most are but valetudinarians, unavoidable invalids from the slow, imperceptible, and undermining effects of malaria, the curse of our climate. Foreign travel has constantly to be resorted to, for the repairs of a constitution thus crippled and shattered, often at the threshold of life. It is from this necessity that much of our time and attention is diverted from profitable engagements at home; that much of our surplus wealth floats abroad, and our white population, which is most needed, is retarded in too undue a degree, to ensure a perpetuity of our social safety, or even our political influence. Is the remedy asked for? It is at hand—the shovel and spade is capable

of effecting a revolution in the whole aspect of our affairs. It can achieve in the hands of a labourer, a greater conquest than the sword in the hands of a Bounaparte. If but a moiety of our physical force could be made to concentrate its action upon a system of public draining, aided by a uniform plan of working the public highways with the spade instead of the hoe the whole extensive region from the Greenville hills to the sea board, could soon be made to team with a healthy, prosperous, and rapidly increasing population.

Amidst the party conflicts of the times, and the pursuit of ideal fancies of State dignities, these homely considerations are lost sight of. But it needs no Prophet's ken to foresee that the time is coming, and not far off, when, if something is not done to lessen the drain of emigration, and give a numerical strength to our white population, the days of our political importance will have been numbered. Indeed, already it may be said of us, "that the Sceptre" is departing "from Judah, and a Law-giver from between her feet."

SIDNEY SMITH.

RULE FOR ASCERTAINING THE WEIGHT OF CATTLE, SHEEP,
AND HOGS.

IN the "Cattle Keeper's Guide" there is a short and easy method given to find the weight of live stock, which will be of considerable utility to breeders. Let the animal stand square, put a string just behind the shoulder blade; then put a string on the tail so as to form a plumb line with the hinder part of the buttocks; direct it along the back to the fore part of the shoulder blade; take the dimensions on the rule as before, which is the length, and work the figures in the following manner: girth 6 ft. 4 in., length 5 ft. 3 in., which multiplied together make $33\frac{1}{2}$ square superficial feet; and again multiplied by 23 (the number of pounds allowed to each superficial foot, for an animal measuring not less than 9 and over 8 feet in girth, 31 is the number of pounds to each superficial foot.—Again, suppose a pig or any small beast should measure 2 feet in girth and 2 feet along the back, which multiplied together make 4 square feet; that multiplied by 11, the number of pounds allowed for each square foot when the measurement is less than three feet in girth, makes 44 pounds. Suppose again, a calf, sheep or hog, should measure 4 ft 6 in., in girth, and 3 ft. 9 in. in length, which multiplied together make $16\frac{3}{4}$ feet, that multiplied by 16, the number of pounds allowed to animals measuring less than five feet and more than three in girth, makes 268 lbs.

HORTICULTURE.

GENERAL REMARKS ON THE MANAGEMENT OF A KITCHEN GARDEN.

[CONCLUDED FROM PAGE 37.]

There is nothing that protects young crops of turnips, cabbages, and other small plants, from the depredations of the fly, so well as rolling; for when the surface is rendered completely smooth, these insects are deprived of the harbour they would otherwise have under the clods and small lumps of earth. This method would be found more effectual than soaking the seeds in any preparation, or dusting the plants with any composition whatever; but as the roller must only be used previous to, or at the time of sowing the seeds, and not even then if the ground be wet, it is necessary that the gardener should have a hogshead always at hand in dry weather, containing infusions made of waste tobacco, lime, soot, cow dung, elder, burdock leaves, &c. A portion of these ingredients, or any other preparation that is pernicious or poisonous to insects, without injuring the plants, thrown into a hogshead kept filled up with water, if used moderately over beds of young plants in dry weather, would, in almost every case, ensure a successful crop.

Saltpetre is pernicious to many species of insects; it is also an excellent manure, and may be used to great advantage when dissolved in the proportion of one pound to four gallons of water.—This liquid applied to plants through the rose of a watering pot, will preserve health and vigour. Soap suds are equally beneficial if used occasionally in the same manner—say once a week. These remedies applied alternately, have been known to restore melon and cucumber vines from the ravages of the yellow fly, bugs, blight, &c., and to keep plants in a thriving condition.

As liquid, nowever, cannot be conveniently used on a large piece of land, it may be necessary, if insects are numerous, to sow tobacco dust mixed with road dust, soot, ashes, lime, or the dust of charcoal, in the proportion of half a bushel per acre, every morning, until the plants are free or secure from their attacks. Turnip seeds will sometimes sprout in forty-eight hours. Cabbage seeds ought to come up within a week after they are sown; but it sometimes happens that the whole is destroyed before a plant is seen above ground; the seedsman, in this case, is often blamed without a cause.

A correspondent has communicated the result of an experiment he has tried for preventing the attacks of flies or fleas on turnips.—He says, “steep your seed in a pint of warm water for two hours, in which is infused one ounce of saltpetre: then dry the seed, and add currier’s oil sufficient to wet the whole; after which mix it

with plaster of paris, so as to separate and render it fit for sowing." Fish oil is known to be destructive to ants and various other small insects, but it is difficult to apply to plants.

In the summer season, broccoli, cabbage, cauliflower, &c., are particularly subject to the ravages of grubs and caterpillars; to prevent this wholly, is perhaps impossible, but it is not difficult to check these troublesome visitors; this may be done, by searching for them on their first appearance, and destroying them. Early in the morning grubs may be collected from the earth, within two or three inches of such plants they may have attacked the night previous.

The approach of caterpillars is discoverable on the leaves of cabbages, many of which are reduced to a thin white skin, by the minute insects which emerge from the eggs placed on them; these leaves being gathered and thrown into the fire, a whole host of enemies may be destroyed at once; whereas, if they are suffered to remain, they will increase so rapidly, that in a few days the plantation, however extensive, may become infested; now, when once these arrive at the butterfly or moth stage of existence, they become capable of perpetuating their destructive race to an almost unlimited extent. The same remarks apply to all other insects in a torpid state.

Worms, maggots, snails, or slugs, may be driven away, by sowing salt or lime in the spring, in the proportion of two to three bushels per acre, or by watering the soil occasionally with salt and water, to the quantity of about two pounds of salt to four gallons of water; or the slug kind may be easily entrapped on small beds of plants, by strewing slices of turuip on them late in the evening; the slugs or snails will readily croud on them, and may be gathered up early in the morning (before sunrise) and destroyed.

Moles may be annoyed and driven away, by obstructing the passage in their burrows with sticks smeared with tar. First insert a clean stick from the surface through the burrows as a borer; then dip others in tar, and pass them through into the floor of the burrows, being careful not to wipe off the tar in the operation. Tar is also an effectual remedy against smut in wheat.—After being heated in a kettle until it becomes thin, it may be stirred in amongst the grain until it becomes saturated. The wheat should afterwards be mixed with a sufficient quantity of wood ashes to dry and render it fit for sowing.

To prevent depredations from crows, steep corn in strong salt-petre brine, sow it over the land, or steep your seed corn, and if the crows once get a taste, they will forsake the field.

Perhaps the next important point to be attended to, is the most proper rotation of crops. Virgil, who was a philosopher as well as a poet, very justly observes, that "THE TRUE REPOSE OF THE EARTH IS A CHANGE OF ITS PRODUCTIONS."

It is a curious fact, that a plant may be killed by the poison which it has itself secreted, as a viper may be stung to death by its own venom. Hence it has been very generally noticed, that the soil in which some particular vegetables have grown, and into which they have discharged the excretions of their roots, is rendered noxious to the prosperity of plants of the same or allied species, though it be quite adapted to the growth and support of other distinct species of vegetables.

It is proved by experience, that fall spinach is an excellent preparative for beets, carrots, radishes, salsify, and all other tap, as well as tuberous-rooted vegetables.

Celery, or potatoes, constitute a suitable preparative for cabbage, cauliflower, and all other plants of the *Brassica* tribe; also artichokes, asparagus, lettuce and onions, provided that such ground be well situated, which is a circumstance always to be duly considered in laying out a garden.

Lands that have long lain in pasture are for the first three or four years after being tilled, superior for cabbages, turnips, potatoes, &c. and afterwards for culinary vegetables in general.

The following rules are subjoined for further government :—

Fibrous-rooted plants may be alternated with tap, or tuberous rooted, and *vice versa*.

Plants which produce luxuriant tops, so as to shade the land, to be succeeded by such as yield small tops, or narrow leaves.

Plants which during their growth, require the operation of stirring the earth, to precede such as do not admit of such culture.

Ground which has been occupied by artichokes, asparagus, rhubarb, sea kale, or such other crops as remain long on a given spot, should be subjected to a regular rotation of crops, for at least as long a period as it remained under such permanent crops.— Hence, in all gardens judiciously managed, the strawberry bed is changed every three or four years, till it has gone the circuit of all the compartments; and asparagus beds, &c., should be renewed on the same principle, as often as they fail to produce luxuriantly. Indeed, no two crops should be allowed to ripen their seeds in succession in the same soil, if it can be avoided; because, if it be not exhausted by such crops, weeds will accumulate more than on beds frequently cultivated.

Manure should be applied to the most profitable and exhausting crops; and the succession of crops should be so arranged, that the ground be kept occupied by plants either valuable in themselves, or which may contribute to the increased value of those which are to follow; and the value of the labour required to mature vegetables, and prepare them for market, should be always taken into consideration.

Many kinds of seed, such as asparagus, capsicum, cellery, fetticus, leek, lettuce, onions, parsnip, parsley, rhubarb, salsify, spinach,

&c., will not vegetate freely in dry weather, unless the ground be watered or rolled; where there is no roller on the premises, the following may answer for small beds as a substitute: after the seeds are sown and the ground well raked, take a board (or boards,) the whole length of the bed, lay them flat on the ground, beginning at one edge of the bed, walk the whole length of the bed, this will press the soil on the seeds, then shift the boards till you have thus gone over the whole bed. In the absence of boards, tread in the seeds with your feet, or strike on the beds with the back of your spade or shovel.

If it be necessary at any time to sow seeds in dry weather, it is recommended to soak them in water, and to dry them with sulphur. This practice, with attentive watering, will cause the seeds to vegetate speedily.

If it should be requisite to transplant any thing when the ground is dry, the transplanting should be always done as soon as the earth is fresh turned over, and the roots of the plants should be steeped in mud made of rich compost, before they are set out.

I have, in most cases, recommended seeds to be sown in drills drawn from eight to twelve inches apart, in preference to sowing broad cast, because the weeds can be more easily destroyed by means of a small hoe; and which, properly used, greatly promotes the growth of young plants.

VEGETABLE GARDEN.*

BEAN.—VICIA.

THE original Latin name of the bean was *faba*, but of late botanists have made it a specific to the vetch.

The bean is a native of the East, and particularly of Egypt; but it has been known in England from time immemorial, and was in all probability introduced by the Romans.

The seeds are the only part used in cookery; which after being boiled, are considered a very wholesome aliment. They are seldom eaten in this country in their dried state, but when sent to table young are generally admired, particularly as an accompaniment to bacon.

* On carefully overlooking Rogers' Vegetable Cultivator, (the work we proposed re-publishing, with alterations,) we find it necessary to make so many alterations, we have concluded to make the articles on Vegetable Gardening, a compilation, from several Authors, adopting their directions to our climate, without the formality of giving credit either for what we extract or write ourselves.

There are many varieties of the bean at present under cultivation; the following are selected as the principal and most distinct sorts:

1. Early Mazagan, so named from a settlement of the Portuguese on the coast of Morocco. It is one of the hardiest and best flavoured of the small and early sorts; but is but partially planted at present, on account of the introduction of other superior varieties.

2. The Lisbon is next in point of earliness: it is much like the Mazagan; but the seeds are rather larger.

3. Early Long-pod; so called from the shape of the pod, and its earliness. This is a most prolific variety, and is consequently a great acquisition to the cottage gardener.

4. Sword, or Turkey Long-pod, is an excellent bean, being very prolific and well flavoured: it is very like the common long-pod, with only a slight difference in the growth of the pods.

5. Sandwich Broad-bean.—A very good kind, formerly in great repute: it is now superseded by the Windsor: but, being harder, is commonly sown a month earlier: it is a plentiful bearer; but not very delicate for the table.

6. Broad Windsor is allowed to be the best of all the sorts for the table. When they are planted in a good soil, and allowed sufficient room, their seeds will be very large and in great plenty; and, when gathered young, they are the sweetest and best tasted of any. This sort of bean is seldom planted before Christmas, because it will not bear the frost so well, as many of the other sorts: it is generally planted in England for the main crop. There are several sub-varieties; such as the broad Windsor, Kentish Windsor, and Taylor's Windsor. The latter is the best and most generally cultivated.

7. White-blossomed Bean, so called because the black mark on the wing of the blossom is wanting. This sort, from its having less of the peculiar bean flavour, when young, than any of the others, is in much esteem with many persons: it also boils very green; it bears abundance of smallish, long, narrow pods; and the seeds are almost black when ripe.

8. Green Nonpareil, a delicate and fine flavoured variety, is now generally planted for a late crop, for which purpose it is admirably fitted.

9. Dwarf Fan, or Cluster bean, grows about a foot high, throwing up three or four stems from each root: it is usually planted for curiosity; but may be cultivated in a small garden.

10. Green Windsor is a very delicate bean, and is planted at the same time as the white Windsor.

11. New Dwarf Prolific is a good new sort, having the excellent qualities which its name implies.

12. Dutch Long-pod.—Height four to five feet; pods long, broad, and slightly pendulous, containing five, and often six seeds, which

are about the size of the Windsor but more elongated. This is rather a superior sort, but not so well known as some of the others ; it is an excellent bearer and rather late.

13. Johnson's Wonderful—This is a newly introduced and apparently a superior variety. Its pods are long, and containing six or eight beans resembling in size and shape none of the Windsor.

Culture.—To procure an early crop of beans, the author recommends an early sort to be sown towards the end of October, in a warm border, exposed to the sun : they must be set in rows, two feet asunder, and three inches apart in the rows, and about two inches deep.

To obtain a very early crop, a successful method is to sow the beans thickly together in a bed of light earth, under a warm aspect, with the view of protecting them from the severe frost, and of transplanting them to warm borders in the spring. The width of a garden-frame will be found sufficient ground for planting the beans. If there is a frame to spare, place it over them ; and in frosty weather the lights can be put on and otherwise protected with garden mats and dry litter : on no account omit giving a supply of fresh air in mild weather, or the plants will be drawn up weakly and spoiled. They remain in the bed till [*January.*] February or March, when as soon as the weather admits, transplant them into a warm south border, in rows two feet apart, or by the warm side of the alleys between the asparagus beds, which, with care, will not interfere with the work necessary to be done to them in the spring. In removing the bean plants from the seed-bed, ease them out with all their roots, and with as much mould as will adhere to them.—Their after culture only requires a little earthing up, and their tops to be pinched off when in bloom.

By the above mode of treatment the fruiting of the beans will be accelerated at least ten days or a fortnight before any that are planted in the open ground, let the weather be ever so favourable ; besides, in severe weather, there will be a certainty of a crop.

For a succession, any of the early kinds may be planted at the end of November and in December. A new early variety of the long-pod, raised by Messrs. Field and Child, of Thames Street, London, is a most excellent one for the purpose. The Mazagan bean is now generally planted for the very early crops.

For the principal crop of beans, any of the sorts may be sown in drills during the month of December and January, but they do not succeed well if planted later than January. The large beans, two feet and a half apart between the rows, and three inches in the rows, and the same depth ; the smaller varieties are not planted quite so far apart, and not so deep ; two inches being sufficient.

As the different crops come into full blossom, pinch off the tops,

in order to promote their fruiting sooner, in a more plentiful production of well filled pods: this is also a preventive against the black blight, which so often attacks this crop, especially in confined situations. The pods are fit to gather for the table when they attain about half the size which they should possess at maturity. If left longer, they become black-eyed, tough, and strong-tasted, and very inferior for use.

KIDNEY BEAN.—*PHASEOLUS*.

THE botanic term *Phaseolus* is supposed to allude to the shape of the seed-vessel, which resembles a kind of small boat, known under the same denomination. The English name kidney-bean was given on account of the seed being of a kidney shape; it is also erroneously called French bean, from its being a long time cultivated in that country, and introduced under that name to its neighbours. The native place of the kidney-bean is the most southerly part of Europe.

Numerous are the varieties of this pulse which have been introduced within the last fifty years: most of them are good; but the following have stood the test of time, and will be found fully to answer the description given.

DWARF VARIETIES.

1. Negro Kidney Bean.—There are two sorts, the large and small (the latter is best for forcing;) they are generally planted for a first and last crop, for which they are well adapted, and, on account of their coming quickly in and quickly off, they are very suitable for the market gardener, who always finds a ready sale for them early in the season.

2. Dun or Liver-coloured, excellent for bearing, should be planted for the main and successional crops, and also for forcing.

3. Red-speckled, is equal to the best, either for forcing or the open ground; it was first raised by a gardener named Fulmer, whose name it continues to bear to this day. It is very prolific, of a compact growth, and comes in early.

4. Black and Purple-speckled, are two good sorts; they resemble each other in growth and quality, and are cultivated for a succession.

5. Yellow, also known as Cream-colour, is one of the best and most useful sorts in cultivation. It is a good family and market bean; is very productive and well flavoured, and should be planted extensively for the main or principal crop, and especially by the cottager.

Any of the above five sorts will be found the most profitable and useful, either for forcing or the open ground: there are many intermediate varieties of similar growth and bearing to the above, so that there are plenty to choose from.

6. White Dutch, a fine bean, but of rambling growth, and, as before observed, the first introduced into this country.

7. Canterbury, a small late white bean: it is a very prolific bearer, and principally planted in order to gather the pods for pickling.

8. Battersea—very like the Canterbury in shape, colour, and bearing, and is chiefly planted for the same purpose.

[All of the above beans are cultivated in the United States, and many others not enumerated. Those most generally cultivated are the Refugee, Mohawk, Early China Spotted, Quaker, Davenport, White Kidney, Marrow, &c. From *Le Bon Jardinier*, we select the following descriptions of those cultivated in France:—]

Dwarf Beans.—The *Early Dwarf Dutch* the earliest, and most eligible for frames. The pod is long, narrow, and excellent in the green state:—the bean is small, white, and somewhat flattened.

The *Flageolet*, or *early Dwarf Laon*.—The kernel is white, narrow, elongated, and slightly cylindrical. This is considered one of the best varieties, and is extensively cultivated in the environs of Paris. It is very dwarfish and early, well suited for the frame, and is much used as a snap, but is also good dry.

The *Dwarf Soissons*, or *large-foot*.—Kernels and pods similar to the *Soissons*; nearly as early as the preceding, and very good green, in pod, or in the dry state. Many varieties of this bean are cultivated in several places, under the name of *groz pied*.

The *White Dwarf Skinless Bean*, *Dwarf Scymetar*.—These two varieties are very similar. They grow in bushy tufts, and the pods of the dwarf scymetar are very long and broad. The bean is white, flat, and small. Both are good in the green state, the pods being destitute of skin until they have attained three fourths of their growth. They are still better dry. On account of the pods being apt to rot, from resting on the ground, they do not succeed well in moist soils.

The *White Dwarf American*.—Stem short, with crowded tufts of branches, and sometimes running slightly, but not so as to require sticks: very prolific. The pod long, arched, full, of a red brown colour at the ends, and without skin. The bean small, white, a little elongated, and very good in the dry state.

The *Two Tuft*.—Very prolific, white; pod without skin; and good both green and dry.

Swiss Beans.—Of which, there are numerous varieties;—the white, red, grey, grey *Bagnolet*, *Plien de la Fleche*, particularly cultivated in Mainé, the Mowhak, recently received from the United States, and the *dow stomach*. They all resemble each other in their good qualities, and their elongated kernels. They are highly esteemed for snaps, and large quantities of the Grey Swiss and the *Bagnolet* especially, are cultivated near Paris for this purpose, and also to be used in the dry state in winter. The *Bagnolet* is earlier than the grey, and is not so apt to run, which is very common with

the Swiss beans. The Fleche possesses the same qualities, its pods are slender and full, and continue for a long time. The Mohawk is more dwarfish, and earlier. It promises to be a good variety for forcing, as well as for the open ground. It is very good in the dry state. The white, the red, and the dow stomach, have nearly the same properties. The last, however, is better in soup than in pod.

The *Black Dwarf*.—It rivals the Swiss beans, in the green state and is early, fruitful, but much disposed to run.

The *Red Orleans*.—Particularly esteemed dry, and in stews. The bean is small, flat, and of a red colour.

The *Yellow Dwarf Canadian*.—One of the earliest and most dwarfish, skinless and excellent in the pod, also in the dry state. The bean is nearly round, of a pale yellow color, having a brownish circle about the eye.

The *China*.—Very productive, and excellent, both in pod and dry; the bean is of a pale sulphur color, large and rounded. There is a sub-variety of a pale bronze color, which is equally good.

The *Black Belgian*.—An excellent variety, introduced into France by M. Vibert. It is earlier than the Dwarf Dutch. Its fine, straight pods are excellent in the green state. Its precocity and dwarfish growth, fit it admirably for frames.

RUNNING VARIETIES.

Climbing or pole Beans.—*Bean of Soissons*.—Kernels large, flat, and white. This bean so highly prized in Paris, in the dry state, is merely the common flat white in general cultivation. At Soissons, however, it acquires a peculiar fineness of flavor, and in the texture of its skin, which renders it superior to those cultivated in other situations.

The *Sabre, or Scymetar*.—White, compressed, and flattened, frequently arched, and of medium size. This is perhaps the best variety. It produces abundantly; its pods are very long, and of large size, and when young, they are excellent in the green state. When they have nearly reached their full growth, they are still tender, and make good snaps, or may be cut into slips, and preserved in salt for winter use. The kernels either fresh or dry, are equal, perhaps superior to the Soissons. They are tall climbers, and require long poles.

The *Prédome, Prudhomme, Prodommet*.—Kernels small, greyish white, and oval. This is an excellent snap bean. Its pod is skinless, and remains good, even when almost dry. The kernel, in the dry state, is highly esteemed.

The *Prague, or Red Pea*.—Kernel round, of a reddish violet color,—late, but very prolific in autumn when the season is favorable, and when it is supplied with tall poles, which are indispensable.

It is a skinless bean, and very good as such. In the dry state, the skin of the kernel is somewhat thick, but it is farinacious, dry and pasty, like a chestnut, and of a pleasant taste.

The *Bicolored Prague*—Possesses the same qualities as the preceding, the kernels somewhat larger, very fine.

The *Sophia*—Resembles the Prague, but differs in the kernels being white, and of larger size. It is perhaps best as a snap bean. In the dry state, it is inferior, being watery, and tough skinned. This may be owing to the soil.

The *Rice*.—This small variety is by some esteemed on account of its delicate diminutive, white kernels, and its long slender pods. It swells considerably, and its green pods are good. By some it is liked in its dry state, while others consider it inferior.

The *Lima*, (*Ph. lunatus*).—Large, flat, of a dull white color. The pod broad, short, somewhat rough, and hairy, like the Spanish bean. It is remarkable for its farinaceous qualities, and its great productiveness, but is somewhat late and tender, and does best in a mild climate.

The *Sieva*.—A variety of the preceding from America, is small, and somewhat earlier.

The *Cape*.—Analogous to the Lima, in growth and productiveness. It belongs to the *Ph. lunatus*, and differs from the Lima in its kernels being flatter, broader, and spotted with red. It has been successfully cultivated by M. de la Four, near Paris.

The *Spanish, or Scarlet*—Is distinct from the common bean, and has two varieties. That with scarlet is chiefly cultivated for ornament, although it is edible. The white flowered variety is cultivated for both ornament and table use, and for the latter purpose it is superior to the scarlet, and is esteemed by some on account of its farinaceous qualities; its skin however, is somewhat thick. A third variety with partly colored flowers has been recently received from England. It is a very handsome bean, but for economical purposes it probably does not possess any superiority over the allied varieties.

To these may be added the following:—

White Dutch runner, a fine bean, and a very prolific bearer. It is called in many parts of England Case-knife bean, from the shape of the seed-pod, which is of considerable length, flat, and rather bent. It is a favourite bean in the county of Kent, and much cultivated by the farmer and cottager. Upon the whole, however, the preference is to be given to the scarlet runner.

Azonian Kidney Bean is so named by the author, on account of its flourishing in some of those islands.

The seeds are rather small, flat, and quite of the kidney shape; the plants are good bearers, producing their pulse nearly a foot long, in branches of four to every joint, and almost from the ground to upwards of twenty feet, till the frost check them.

Horticultural.—This is among the best, if not the very best of the pole beans. The seeds are large, round, and white, spotted with red, the pods are of good size and tender. The beans grow rapidly in the pods which are best for the table when they have attained some size.

CULTURE OF THE DWARF VARIETIES.

The soil for kidney beans in general, but more particularly for early crops, should be rich, light, and dry, and must have been manured for a crop or two before (fresh dunged ground being a poison to the seed,) and also worked up to the depth of a foot or eighteen inches. The ground being well wrought and levelled, drills may be drawn two inches deep, and, if for a principal crop, at two feet or two feet and a half distance, according to the size of the seed. The best season for planting the beans is the first or second week in March. They are set in drills from two to three inches apart: and their future culture will consist principally in keeping the ground clear from weeds, and when the plants have fully expanded their first rough leaves, in drawing up some earth on each side of them to strengthen and prevent them from being much shaken by the wind.

For successional crops, the *primum* of gardening, a few rows, more or less, according to the wants of the family, should be sown about every three weeks from the end of March to the first week in September, the last sowing to be the small Negro variety, which will continue till the first sharp frost in October. Should the ground be dry at the time necessary for sowing any of the intermediate crops, the seed may be soaked in water for a night, or the drills well moistened, when the seed is sown. This will accelerate their growth, and produce more regular crops.

Where a quantity of this vegetable is required, either for pickling or preserving, if a few rows of the Canterbury or Battersea variety are sown the third week in May, they will come in at a more early and proper season than those gathered from the main crop for the purpose; and the sooner they are used after being gathered the better.

In private gardens, where there are no hot-house, pits, &c., the following method may be resorted to, by which this desirable pulse may be obtained ten days or a fortnight earlier than those sown in the open ground. A slight hot-bed should be made about the third week in February, and covered five or six inches with some light rich soil, over which one or more hand-glasses must be set, according to the breadth of seed sown. In want of glasses the bed may be arched over with stakes, and covered with mats; the seed after being planted, will soon vegetate and come up; and when that is observed, in whatever way they are covered, let plenty of air be

given in the day, and if the weather is mild, little at night, so as to harden them sufficiently for planting out.

If all has gone on well, and the plants having produced their leading shoots, are in good order, towards the middle of March, (no precise time can be mentioned, as much depends on the weather,) they are to be planted out, either close under some warm wall or on a south border. In either place the ground should be well broken up, and wherever the plants are set, if within a few inches of the wall, or in lines along or across the border, drills should be drawn to receive them: if there be more than one row, about eighteen inches between each will be sufficient. The ground being ready, the plants should be carefully taken up from under the hand-glasses, and with a garden trowel set about four or five inches apart, and an inch or two deeper than they were before in the seed-bed: at the same time should the weather or ground be dry, a little water must be given, but not that taken immediately from the pump or pond, for reasons given in a former part of the work; as the chilliness of the water, often given to tender plants in the early spring months, is the cause of their perishing. Where there are forcing houses in work, water for such purposes can always be kept in readiness.

As the plants advance in growth, earth should be drawn to their stems, and if the plants are in a vigorous growing state, a few of the leading shoots may have their tops pinched off, which will produce a more regular crop.

CULTURE OF THE RUNNING VARIETIES.

Few words will suffice under this head, no vegetable being more easy of cultivation. Some of the finest crops are often seen growing in the well stocked garden of the cotager, who values it not only as furnishing him with a nourishing and wholesome diet, but also as forming an excellent arbour from the mid-day sun, and a beautiful natural porch to his dwelling.

The soil for planting the seed should be similar to that advised for the dwarfs. About the second week in March (a most sure season) an open well wrought piece of ground should be chosen, and after being properly prepared, a drill should be drawn from north to south, about two inches deep. The seed is then dropped in about three inches asunder, and covered lightly with the hoe. If there be more than one row, they should be full three feet or more apart, so as to be well open to the sun and air, to ensure a better crop.

When the plants are about three or four inches high, a little earth will be of much service, drawn up on each side, and when it is observed they begin to form runners, tall, strong, bushy sticks should be placed (not too close,) firmly on each side. They will

afterwards give but little trouble, except in keeping the ground clear of weeds, and gathering the pulse for use. When a crop of these beans is required to continue for a length of time in a bearing state, the fewer beans left on for seed the better; these checking their produce for the table. The other sorts do not require such bushy sticks as for the scarlet, though quite as tall or taller; a single pole or twine would do for the Azonian bean, and when once they catch their support, they will afterwards guide and support themselves. When the growth of the scarlet runners is checked by the autumnal frosts, the haulm may be cleared away, and, if some dry litter is spread over the roots as a protection from any severe weather, they will grow, and produce an early and abundant crop the following summer; they can also be taken up on the approach of frost, and preserved through the winter in some dry mould, and re-planted again in March. This method of preserving the old roots may be had recourse to in any contingency, but the present practice of sowing fresh seed every spring is preferable, and attended with a greater certainty of success.

BEET.—BETA.

BETA takes its name from the shape of its seed vessel, which when it swells with seed, has the form of the letter so called in the Greek alphabet.

The Beet is a native of Sicily, and of the sea-coast of the south of Europe. It was introduced into this country, with many other culinary plants, in the year 1548.

There are several varieties of the beet in cultivation for culinary purposes, but some are much more extensively used than others. The following list gives the name, merit, and use of each:—

1. Red Beet.—This sort is highly valued for its large red root, which often grows twelve or fifteen inches long, and three or four inches thick. The roots being tender, sweet, and palatable, are boiled, then sliced and eaten cold, with vinegar, &c.; they are also sliced and scraped in salads, both as an eatable ingredient, and by way of garnish; they also make an agreeable pickle. A beet-root, sliced up with a Reading or Portugal onion boiled also in soft water, will be found a very nice condiment with cold meat, if mixed with spices and vinegar, and an egg or two boiled hard. The root itself, if eaten alone, affords but little nourishment; it is, therefore, generally used as a luxury.

2. Turnip-rooted Beet is an earlier variety, and much shorter and thicker than the former, but is equally good in every respect for use: in both sorts those that are of the largest growth and darkest red colour are the most valuable.

3. *Small Red Castelnaudary*.—Much smaller than the *Long Red*, in all its parts; root fusiform, entirely under ground; flesh of a deep dark red, fine and compact; noted for its excellent qualities.

4. *Common Yellow*.—Long, large, and very sweet.

5. *Yellow Castelnaudary*.—Small, very fine flesh, and of excellent qualities.

6. *Yellow Turnip Rooted*.—Root finely shaped, and good.

7. White Beet (*Beta Cicla*,) was brought to England from Portugal in the year 1570, and is in much esteem for the stalks and ribs of the large leaves, which, being divested of the leafy part, and peeled, are great improvers of soup, and useful also for stewing and to be dressed and eaten like asparagus; the leaves themselves are fine pot-herbs. The above three varieties are mostly cultivated for culinary use.

8. Green-leaved Beet is much grown in Scotland, and is used for the same purposes as the white; but it is not so much esteemed, being smaller and less delicate. It is fit for use all the winter.

9. Yellow or Mangel Wurtzel Beet is principally grown as a valuable agricultural plant, for feeding cattle, and making sugar. The roots grow to a large size, but are greatly inferior for culinary purposes, both to the red beet and most other of our esculent roots. They are sometimes dressed like carrots or parsnips, sliced and served up with melted butter, but are generally mawkish and unpalatable. The leaves, however, are of most value; and, if the plants have room enough, they will grow twelve or fifteen inches broad, and to a considerable length: the young, thick fleshy stalks, divested of the lamina of the leaf, peeled or scraped, and then boiled and served up with butter, are tender and agreeable to the taste. The green leaves are also occasionally dressed as spinach, which it much resembles.

10. Silver or Sea-kail Beet.—This sort is considered by some to be superior to the *Beta Cicla*: it is much cultivated in the neighbourhood of Southampton, on account of its large midribs, which, when cooked resemble sea-kail.

A large quantity of sugar can be obtained from the beet-root; and it has of late been extensively cultivated for that purpose, especially in France and Germany.

Culture.—Little art is required in the cultivation of the beet; all the varieties are raised from seed sown annually in January, February or March, in the place where the plants are to remain; for it will not do to transplant the long varieties if a large, clean, well-grown root is wanted. [*The turnip rooted variety however, may be successfully transplanted.*]

The soil in which it grows best is a deep, rich, light, sandy earth, in an open situation. [*It is preferable to cultivate them on ground which has been highly manured for some previous crop, and which*

does not require any fresh application of manure, but merely to be well pulverised. This is peculiarly requisite for the long rooted varieties, when a straight clean root is desired. The turnip rooted variety may be sown on ground freshly manured, and even on ridglets made over fresh manure.] After the ground has been dug, manured and well broken, the seed may be sown either broad-cast, and raked well into the ground, or which is far preferable, in shallow drills, at the distance of a foot apart; sow the seeds thinly, and rake the earth over them smoothly, about an inch deep. The plants come up in a month; and when they are advanced into leaves an inch or two broad, they require to be thinned and cleared from weeds, which may be performed either by hand weeding or with a small hoe: the plants when properly thinned, remain at the distance of ten or twelve inches each way. The turnip rooted sort at rather less. [*The thinning should take place early, as they are injured when left crowded together long. They should be hoed frequently and kept clear of weeds. Those sown in January and February, will be fit for the table in May and June, but in this vicinity they cannot be kept during the summer, as they rot as soon as the rains set in. I am inclined to think however, (from some experiments made,) that this will not be the case with plants from seeds grown several years in this State. For winter use they should be sown in the months of August and September, and may be, even as late as October. The cut-worm is the principal enemy to be dreaded at this season.*] The red beet-roots will acquire their full growth in the upper part of the State by September or October, and can then be taken up for use when wanted. Towards the end of November all the remaining roots should be taken up on a dry day, and divested of any soil hanging to them; the leaves must then be cut off within an inch of the crown, and care must be taken that the roots are not in any way cut or broken, as they bleed much. After the roots are well dried, they may be laid in a box or bed of dry sand or earth, and placed in a cellar or shed, where they will remain good throughout the winter and the early part of spring.

The Chard beet is raised in the same manner as the other sorts; but the seed should be sown in drills, eighteen inches apart, and afterwards thinned to the distance of twelve inches, to allow of the expansion of its large succulent leaves. They are commonly in perfection in June and July. In gathering them, take the large outward leaves, allowing the others to come in for use in their turn, as an abundant successive supply rises from the root.

THE FLOWER GARDEN.

—
For the Southern Agriculturist.

ON THE CULTURE OF THE DAHLIA.

EVERY admirer of flowers, has, almost invariably a favorite tribe to which he is more particularly attached, but I believe I may, without hesitation assert that no flower is in so universal estimation at the present day, as the Dahlia, and whether we view its pure masses of varied foliage, the majestic mein of the plant, the size and symetry of its flowers, or the brilliant and infinite variety of it in cultivation, we cannot but acknowledge that it is richly worthy of the esteem it has so fairly won from the floriculturist. Who that can look with complacency on the sun-flower, the marigold or the China aster, the favourites of our ancestors, will not rise into raptures at the sight of the best varieties of this premier flower of autumn.

I shall not enter into the minutiae of propagating the Dahlia where a great many plants are wanted from any of the choicest sorts, and when there is only a root or two to work from—this is more the province of the commercial florist or nurseryman than the amateur. I shall therefore only state, that when a few of a sort are required from one root. Let that root be planted in the ground in a warm aspect, and completely covered about two inches with fine soil and kept moderately moist; and when the shoots appear above ground, the root may be taken up, place it on a board, and with a sharp knife divide it into as many pieces as there are shoots,—preserving part of the tuber with each shoot. These may be planted at once where they are to bloom. To have a good number of flowers, much depends on the soil and situation which they are put into. The situation should be sheltered, but not under or even near the shade of tall trees, for if so placed, the plants will be weak and the flowers small. The Dahlia delights in a change of soil, and consequently should not, if possible, be grown more than one or two years in the same place. In planting Dahlias, let the crowns of the tubers be at least two or three inches under the surface. Wherever the size of the garden will admit of it, four or five feet space each way, should be allowed between the plants, by which their health and strength will be much improved, and they will show to far greater advantage than if planted nearer each other.

I would strongly advise, that in the cultivation of the Dahlia, the earth be drawn round the stems similar to what is done with corn; the advantages derived from it are numerous,—the plants grow more freely, the flowers larger, the colours finer, the crowns of the

roots plump, the roots more sound, the crowns are preserved from the effects of cold, rain, and frost in the fall, and the roots keep far better in winter than if otherwise treated.

Yours truly,

A DAHLIA GROWER.

For the Southern Agriculturist.

ROSES PROPAGATED BY CUTTING OF THE ROOTS.

In February or March take some of the long, thick, and fleshy looking roots of Roses and cut them into pieces of about three inches long. Then smooth the surface of a border and place the roots flat, about six inches apart; cover them with finely sifted soil about half an inch deep, gently beating it with the back of the spade; a quantity of good soil well enriched with cow-dung, perfectly decomposed, is then to be laid on four inches thick; smooth the bed over and give a copious watering. For raising the moss roses, or similar kinds, which are difficult to increase by cuttings of the wood or young shoots, this is a most efficacious method and scarcely ever fails. Occasional waterings during dry weather, of course, is very essential and ought on no account to be neglected. I may here add, perfectly decomposed cow-dung is decidedly the best manure for the rose. A portion of it placed about the roots in the spring and just pointed in to give a slight covering of soil will greatly improve the vigour of the plants, and increase the bloom.

Yours,

A. G.

For the Southern Agriculturist.

ON THE DOUBLE FLOWERING POMEGRANATE.

I am a great advocate for a free use of the pruning knife among shrubs, plants, &c., but this must be done with discretion, for there are many shrubs which will not, as gardeners term it, *stand the knife*. Among these I may particularize the *Double Flowering Pomgranate*, which ought never to be pruned during fall, winter, or spring; but during the summer regulate the branches or shoots of young wood when they are young and tender, and may be easily removed without the assistance of a kife, taking care to leave all blossom shoots and spurs, these are easily distinguished from wood shoots. They will require thinning in this manner several times during the summer, but the number and splendour of its blossoms

will amply repay for every care we can bestow. This plan is at variance with written instructions which I have frequently read, but *experientia docet*.

Yours,

A. G.

HINTS ON FLORICULTURE.

By the first of April, the night frosts of spring may be fairly considered as past, and consequently preparation may be made to fill up the different compartments of the flower garden, with such superfluous ornamental plants the greenhouse, &c. may contain: as eligible plants for out door summer decoration, large plants of the Fuchsias may be named, not forgetting the new species *F. bacillaris*, *Salvia splendens*, *fulgens*, *involucrata*, *Grahami*, and even *formosa*, are particularly splendid: and *S. fulgens*, planted in rich light soil, at the base of a warm aspect wall, and trained over the face of that wall, forms, in autumn, an especially splendid object. *Petunia nyctaginiflora*, whose large white flowers are very fragrant by night, treated in the same way, is surprisingly improved and rendered a very ornamental object. *Pelargoniums* may be copiously planted out: and the trailing-stemmed ivy leaved kinds, trained over the surface of little beds set apart for them, and pegged into the soil at their joints, cover the earth with their glossy leaves charmingly, and flower beautifully and abundantly in the autumn. *Maurandia Barclayana* and *M. semperflorens* are well known summer climbers of great elegance and beauty; and although there is a coarseness of aspect in the *Lophospermum erubescens*, it is a climber whose copious wreaths of rosy blossoms excel in beauty, many other plants of a more delicate habit. *Ficus elastica* is a beautiful object in its leaves during summer and autumn, when plunged over the rim of its pot in the soil of a sunny border; also the New Holland Acacias and numerous other plants.—*J. D. Gard. Mag.*

CHINA ASTERS.

CULTURE.—China Asters are generally raised on a hot bed, and when wanted to flower finely, the young plants should be purchased of a nurseryman in May, [April.] When raised on the open ground, the seeds should be sown in a warm border early in April, [March,] and the plants pricked out towards the end of May, [April,] or sooner; when they are about three inches high. In all cases, China Asters do best when transplanted, as, when left where they were sown, the flowers are generally poor. It is also not thought advisable to grow

China Asters two years in succession on the same ground. When pricked out from the seed bed, the young plants should be put into a bed of very rich soil, trenched at least a spade deep, and mixed with well rotten dung from an old hot bed, though some cultivators prefer ground that has been richly manured the previous season. The plants in this bed of rich earth should be placed at least six inches or a foot apart from each other every way, and shaded and well watered after transplanting. When they are to be placed so as to produce an effect by their colours, in forming figures, &c., they are generally again transplanted, just as they have formed their flower-buds sufficiently, for the colour to be distinguished; taking them up carefully with an instrument called a transplanter, used in removing tulips, so as not to break the balls of earth round the roots of each plant. Chalked strings are then stretched over the beds, so as to form the figure required, and the Asters are carefully planted in stars, circles, letters, crescents, rainbows, &c., according to the fancy of the florist. We once saw in a French garden, purple Asters planted among white ones, so as to form a dark purple star on a white ground, which produced a very striking and beautiful effect. China Asters look very well on a bank planted in rows, one colour in each row, or in rings of different colours round a circle; with the tallest plants in the centre, and the dwarf plants nearest the edge.—*Mrs. Loudon's Ladies' Flower Garden.*

THE ORCHARD.

THE FIG TREE.

The following information from a French agricultural paper, is deserving of the attention of Horticulturists. In our Southern States the fig tree, except in some favorable situations along our sea-board, requires some protection during frosty weather. The plan of bending down and covering the branches during winter with earth, will undoubtedly save them from frost, and the removing of the leaf-bud in order to increase the size of the fruit is not only reasonable, but is borne out by experiments successfully tried in this city.

[EDITOR OF SO. AGR.]

THE inhabitants of Argenteuil, near Paris, derive their chief support from the culture of fig trees; near that town are immense fields covered with these trees, on the sides of hills facing the south, and in other places sheltered from the north, and the north-west winds.

In the autumn, the earth about the roots of these trees is stirred and dug; as soon as the frosts commences, the gardeners bend

down the branches, and bury them under six inches of mould, which is sufficient to preserve them from being frozen.

The branches must be entirely stript of their leaves before this is done; the gardener then taking hold of the top of each branch, bends it down gradually, and with much care, to prevent its breaking, placing his knee or hand under such parts as resists the most; the branches that will not bend low enough to be buried, are cut off close to the ground.

A fig tree will remain buried in this manner seventy-five or eighty days without harm; when the season is mild the gardeners uncover them, especially in times of warm rains, but on the first symptoms of frost they are again buried. Severe frosts sometimes reach them, but the branches only are destroyed. The roots produce a new crop in the summer; but these do not bear fruit till the next year, and are more tender and liable to be killed by frost during the next winter, than older and more woody branches.

In the spring, the trees are carefully inspected, and where a double bud is observed, the gardeners, who are able to distinguish a leaf-bud, which is more sharp, from a fruit-bud, which is rounder, pinch out the leaf-buds, without hurting the fruit-buds; these, as they receive the sap prepared by the plant for two purposes, produce fruit of double the ordinary size; this is done at Paris between the first and tenth of June; but these leaf-buds may be suffered to expand a little, till they can be distinguished with certainty; they must not all be destroyed at the same time. In cool seasons, the ripening of the fruit is hastened by inserting a drop of oil in the eye, from the point of a pen or tooth-pick.

It is necessary in dry seasons to water fig trees; the nature of the plant requires to have its root cool, while its head is exposed to the hottest sun. If planted against the south wall of a house near a spout that brings water from the roof, it thrives luxuriantly. Figs do well also in a paved court; the stones keep the ground under them moist and cool, while the surrounding buildings reflect and increase the heat of the sun's rays.

CULTURE OF THE PEACH TREE.

It has been mentioned by writers on the culture of the Peach Tree, that hot water poured around the trunk at the surface of the ground, will destroy the worm. We have not yet tried it, but we intend to do so; and in the meantime we would suggest to our readers, that it may be done at any time during the winter or spring when there is no snow and the soil is unfrozen. We think the work would be more thoroughly done, however, if the gum be first removed, so that the hot water may enter the habitation of this insect.

Soot has been found excellent for this tree. In one case that has come to our knowledge, its pale leaves were changed into a dark green by this application round its roots; and though the effect may in part have been caused by the destruction of the worm, it has doubtless acted, also as a manure. Those who have stove pipes to clean and peach trees to cultivate, should save the soot for this purpose.

One of the most deplorable conditions that a peach tree can be placed in, is to stand in a meadow or grass ground which is annually mowed. Sometimes we see them in door-yards where the grass grows strong, but where neither pigs, nor sheep, nor cattle are allowed to enter. A half starved tree however, is no ornament in front of a house; but we will not find fault without proposing a remedy. Cultivate a circle round each tree, of two or three feet in diameter; and hoe in manure from the stable, the hog pen, the hen roost, the leach tub, or the wood pile, not forgetting the stove pipe, and the tree will soon compensate for the labor by its beauty and productiveness.—*New Genesee Farmer*.

For the Southern Agriculturist.

ON THE DESTRUCTION OF INSECTS INJURIOUS TO FRUIT TREES :

BY J. HUTCHINS.

Natches, (Miss.) January 6th, 1841.

Mr. Editor :—I am not accustomed to giving my opinions in writing, but believing that I can suggest something that will be useful to the community, I have ventured to attempt it for the first time.

You know that our fruit trees, of all sorts, and young fruit also, and grain fields and gardens and vineyards, are all subject to be injured by the depredations of worms and insects of various kinds, as well as bee-hives, by the web-worm. Most of the worms are produced from eggs deposited by butterflies, moths, or millers. You may have observed that all these winged insects will fly to a light after night: they do so here;—cannot some of your wealthy Carolinians make the following experiment:—Place a tub on a block about four feet above the ground (the tub ought to be about four feet across the top, and from four to eight inches deep,) fill it nearly full of water, on which pour a half pint of lamp oil. Above the tub, and nearly touching the oil, hang a brilliant glass lamp (un-ground glass,) over the top of the lamp place an inverted funnel, painted black, the tube of the funnel ought to be large enough to let the heat and smoke of the lamp escape; place a sheet of tin above, to keep out rain; light your lamp at twilight, and keep it burning all night and you will be surprised at the vast quantity of insects

which will be in the tub in the morning. They dart at the light of the lamp and fall into the tub, the oil attaches itself to their wings and prevents their escape; skim them off with a ladle and put them into a sleazy bag, and hang it over the tub until the oil drains from them, after which they can be burned. One good large lamp will be sufficient for a piece of land of two hundred yards every way from the lamp unless under-wood or hills intervene.

Gardeners, planters, and farmers, all know, that early in the spring, as soon as frosts are over, is the time when insects begin to deposit their eggs, and as the season advances they increase.

If the above experiment is well attended to, I am sure that much trouble, loss, and expense will be saved, besides the preservation of both orchard and fruit. The best and most rare and delicate fruits are such as are preferred by insects.

I am yours, with great respect,

JOHN HUTCHINS.

METHOD OF FREEING FRUIT TREES FROM MOSS AND INSECTS.

Mr. James Thomas of Derveruden Green, near Chepstow, has found the following mixture an excellent application for the purpose. The mixture is made by taking five bushels of well burnt lime, fresh from the kiln, and slaking it with hot water, in which salt has been dissolved. When the lime has fallen to a fine dry powder, add, by small quantities at a time, a bushel of soot, stirring it in till the two ingredients are completely incorporated. Advantage is taken of the first foggy day, when the trees are damp, but not dripping, to dust them over with this powder. One man may treat fifty trees in a day, and the operation, in Mr. Thomas' opinion, should be repeated twice a year; the first time in March, and the second in October or November.—*Transactions of the Society of Arts.*

VARIETIES OF FRUITS.

Some idea may be formed of the progress of cultivation in increasing the varieties of fruits from the following enumeration of those in the gardens of the Horticultural Society at Chiswick, as appears by a report just given in to the council. The total varieties of fruit there cultivated are two thousand one hundred and sixty-five; of which nine hundred and ten are apples, five hundred and ten pears, one hundred and sixty plums, sixty cherries, thirty peaches, twenty nectarines, fourteen apricots, one hundred and fifteen grapes, fifty figs, twenty-four nuts, two hundred and thirty gooseberries, ten currants, eight raspberries, and twenty-five strawberries.—*Boston Morning Herald.*

MISCELLANEOUS DOMESTIC RECEIPTS.

Meat Jelly for Invalids.—Take half a young lean fowl, four ounces of knuckle of veal, one quart of water; put the meat into a pipkin, add the water, boil it up and skim it well; then add salt to the taste, a carrot, turnip, parsnip, two leeks and half a roasted onion. Then let the whole simmer very gently for about eight hours, when the liquid will be reduced to eight or ten ounces; strain it through a fine sieve and put it in small jars, or custard cups, in a cool place, and in a few hours it will acquire a firm consistence and be found of an agreeable flavour.—*Magazine of Domestic Economy.*

For a Sore Throat.—Take three ounces of fine honey, and two drachms of powdered nitre. Mix the nitre and honey, and take occasionally a small teaspoonful of it into the mouth and let it dissolve as slowly as possible.—*Ibid.*

A Substitute for Bell-Glasses.—To a wooden hoop from twelve to eighteen inches in diameter, fix three segments of a circle to form a sort of dome twelve or thirteen inches high; on this frame glue pieces of calico of the necessary dimensions, and give two coats of the following varnish:—cheese, four ounces; slacked lime one drachm. Mix well and add linseed oil, four ounces. This being thoroughly mixed, add white of egg and water, of each four ounces, to bring the whole to an even consistence. This varnish dries quickly; the oil prevents its peeling off, and also gives a degree of pliancy to the calico. Plants raised under these bells enjoy a more uniform temperature than under glass. The heat does not rise so high in the day, nor does it sink so low during the night. The size may, of course be adapted to the object in view.—*Ibid.*

A means of avoiding the Smell of Cooking in a House.—The smell of cooking too frequently extends to the sitting rooms, whether the kitchen is under them or on the same floor. This discomfort may be avoided by forming, in the tunnel of the chimney, a little door on a level with the ceiling of the kitchen, through which the smell will escape. If the top of the door is lower than the ceiling, it should be connected with an iron tube running up to the same height of the chimney, by which means it will be secure from the effects of sudden changes of weather, &c.; or a distinct tunnel may be built up for the same purpose.—*Ibid.*

To obtain Natural Flowers, Fresh Blown in Winter.—Choose some of the most perfect buds, of the flowers you would preserve, such as are latest in blooming and ready to open; cut them off with a pair of scissors, or knife, leaving to each, if possible, a piece of the stem about three inches long; cover the end of the stem immediately with Spanish wax, and when the buds are a little shrunk and withered, enclose and seal each of them separately in a piece of paper perfectly clean and dry, and preserve untouched in a box or drawer, where they will keep without corrupting. In winter, or any other time when you would have the flowers blow, take the buds over night, and cut off the ends of the stems sealed with Spanish wax, and place them in water, wherein a little nitre or salt has been placed, and the next day you will have the pleasure of seeing the buds open and expand themselves, and the flowers display their most lively colours, and breathe their agreeable odours.—*Ibid.*

Potatoes—Potatoes are often spoiled by bad cooking. They are always best steamed; and nothing is more useful for cottagers than a potatoe steamer, which may be had for three or four shillings. It is only a pan made in two parts; the upper part has holes at the bottom, and fits into the lower part. You put the water into the lower division, and the potatoes pared into the upper; you may boil your meat in the water, and the steam from the broth will dress the potatoes; or instead of the broth you may put in a pudding and some water, so that the pudding will be boiled and the potatoes steamed, all in one pan, and with one trouble. But for those who will not use a steamer, the best way to dress potatoes is to pour the water off just when they are done enough, or a few minutes before, sprinkle a little salt upon them, shake them gently over, and set them by the fire for ten minutes or a quarter of an hour.—*Ibid.*

GARDENER'S CALENDAR FOR FEBRUARY.

VEGETABLE GARDEN.

Sow Peas, Beans, Carrots, Beets, Salsafy, Parsnips, Radishes, Spinage, Lettuce, Turnips, Cabbages, Cauliflowers, Brocoli, Onions, Leeks, Corn, Thyme, Sage, Parsley, and other herbs.

Plant Irish Potatoes, Onion Sets. Make new Asparagus beds, if not done before. Transplant Cabbages, Cauliflowers, Brocoli, Lettuce.

Remarks.—Peas and Beans will yet succeed, but the sooner they are put in the better. The general crop of Beets, Carrots, Salsafy and Parsnips may now be sown: The Carrots, Turnips and Spinage should be of European seeds. The Corn should be sown the last of the month, as well as the herb seeds. All seeds sown this month should be protected if there should be cold weather at the time of their germinating, or while young.

THE FLOWER GARDEN.

Dahlia Roots, should now be potted, (if not done before,) or plunged in a little old tan in the stove or a frame, to forward them for planting out.

Mignonet and ten-week Stocks, sown in December, must be exposed as much as possible, sheltering them only from severe frost or heavy rain.

Ranunculus, planted last month, will be up by the middle of this; select a fine day to press the loose soil to the roots.

Carnations.—Let the last year's layers be planted into large pots, (if not done last month.)

Tigridia Pavonia.—Sow the seed in the beginning of the month in pots or boxes, (if not done before.) Plant the old bulbs in a warm situation in sandy soil.

Pelargoniums, should now be propagated by cuttings.

Hardy Annuals of all sorts, should now be sown, with as little delay as possible. Those intended for flowering where sown, as Mignonette, Catchfly, Lupines, Sweet Sultan, Venus's Looking-glass, Flos Adonis, Lavatera, Venus's Navel-wort, Wax Flower, Virginia Stock, Candytuft, Dwarf Poppy, Nolana Prostrata, Hawkweeds, Dwarf Lychnis, Sweet Peas, Convolvulus Minor, Nasturtiums, Tall Larkspur, Snail and Caterpillar Plants, &c., &c., should be sown in patches on the borders, each sort separate; or some, as Dwarf Rocket Larkspur, China Aster, &c., might be sown in drills if required. Those intended for transplanting, as Ten-week Stocks, Indian Pink, French, African, and Cape Marigolds, Persicaria, Convolvulus Major, &c., &c., might be sown on a border under a south wall, or on a slight hot-bed.

Tender Annuals, should also now be sown in pots, and placed in a frame, on a slight hot-bed, or on the flues of the vinery or stove.

Brompton Stocks, should be sown about the end of the month, for flowering next year.

Tuberoses should now be planted, one root in a pot, with rich light sandy soil, and the pots plunged in a hot bed or bark bed.

Hepaticas may now be successfully divided.

ORCHARD.

Plant out fruit trees and grape vines. They may also be pruned this month if not done before. Towards the last of the month any of the varieties may be grafted.